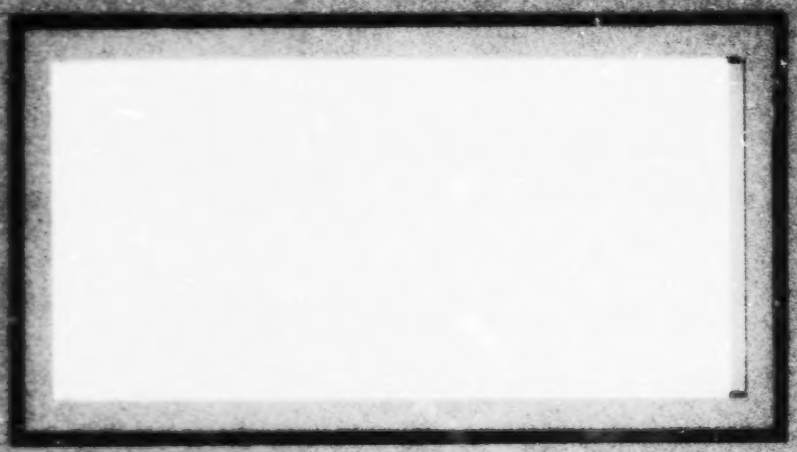
HOUSING CONSERVATION UNIT



HIGHRISE BUILDING PERFORMANCE STUDY

REPAIR RECORDS

Prepared for

Metropolitan Toronto Housing Authority

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HIGHRISE BUILDING PERFORMANCE STUDY

INTRODUCTION

A portion of a highrise apartment building's total operating cost is attributed to maintenance. This portion of operating costs consumed by maintenance increases as a building ages. In order to reduce maintenance costs it is necessary to identify problem areas and determine methods of dealing with them. Financial records indicate areas in which maintenance dollars are spent but they don't provide sufficient information for detailed scrutiny. More information is necessary on the type, source and method of repairs. With this in mind it was felt that a detailed study of the maintenance operations of a sample group of highrise buildings was warranted. This could only be achieved by doing a physical compilation of the work records in a reasonable number of highrise buildings.

The Metropolitan Toronto Housing Authority (M.T.H.A.) is the largest of 60 housing authorities that are commissioned to manage Ontario Housing Corporation (O.H.C.) owned buildings across the province. It was also undertaking several operational reviews in order to determine where cost savings could be achieved. Since they operate 106 highrise apartment buildings in the Metropolitan Toronto area they were interested in having a study performed on a sample group of their buildings. For the purposes of this report a highrise apartment building is defined as a multi unit residential building that is equipped with an elevator.

METHOD

General

Data was collected on six highrise apartment buildings. Five of them have data collected for two years while a sixth has data that encompasses ten years of its operation. This report is based on two years of data for each of the six buildings encompasing 1981 and 1982 only.

The following buildings were included in the study.

Address	Units	Floors	Built	Population (1981)*			
				Child	Adult	Senior	Total
Dunn Ave. (E)	384	21	1973	80	188	260	528
Shuter St. (E)	301	17	1969	118	175	197	490
Oak St. (A)	468	28	1972/3	0	117	378	495
Lawrence Ave. E. (E)	213	14	1969	296	244	16	556
Woolner Ave. (F)	304	17	1968	235	244	131	610
Bellevue Cres. (F)	326	22	1972	70	150	273	493
Total	1996	-	-	807	1118	1255	3180

* Population differs only .5% between 1981 and 1982.

Data was compiled from contracts, staff work orders and records of emergency calls to the Tenant Enquiry Board. The large volume of data was computer analyzed. Site visits followed this analysis in order to discuss various aspects of the maintenance operations with site staff. Modernization and improvement items were not included. Originally, it was intended that there be two separate types of records; those for the public area repairs (Project Records) and those for the suite repairs (Unit Data). The project records were not as reliable as the unit records.

Project Records

There were 1,623 project related repairs recorded in 1981 which represented only 40-60% of the actual repairs. This information is contained in Table IV of the appendix but no analysis was made due to its lack of reliability. The 1982 project repair data was similarly lacking in reliability and was therefore not processed.

Unit Data

In the six buildings there were 6,417 unit service calls recorded in 1981 and 8,195 in 1982. Site staff indicated that most of the work performed in the units was recorded but some work is done spontaneously or in coincidence with other assigned work and consequently was not recorded. It is estimated that the total of 14,612 service calls recorded represents 85% of the work performed. Despite the fact that they are not complete they still constitute an excellent basis for analysis of the buildings.

The unit data is summarized in three types of tables. There are separate sets of tables for 1981 and 1982 data. Table I is entitled "Repairs by Group Total" and contains information on each of the buildings, breaking down the repair calls into groups. Each of the groups is further broken down in order to identify those undertaking the repair and the percentage of repairs by each of these groups. Table I also contains assorted data regarding the building population, age, number and type of units and repairs per unit ratios. Data for all the buildings combined is summarized at the bottom of the table in order to provide an overall view of unit repairs.

Table II "Repairs by Unit Type" provides a more detailed breakdown of the various repair groups. The eight groups are subdivided into 42 categories and further subdivided into repair calls per unit type. The summary at the bottom indicates the total repairs per unit type for each category. In addition there is information regarding numbers and percentages of each type of unit as well as the respective number of repairs per unit. This table is helpful in identifying problems that are characteristic to a certain unit size and tenancy type, i.e. family or senior citizen.

Table III entitled "Repairs by Source" contains information on the same 42 categories but it is sub-categorized by repair source, i.e. staff or contractor. This provides some insight into who is actually carrying out the work.

The data is very detailed. To assist in understanding the information a series of graphs was produced that summarize the tables mentioned above.

Following the analysis of the data, site visits were made in order to discuss the information with the staff and their suggestion for reducing service calls and costs.

FINDINGS

Plumbing problems were the largest single repair group comprising more than one third of all the repairs recorded in both 1981 and 1982. Surprisingly, door related repairs were the second highest group followed closely by electrical and appliance repairs. The relative importance of each of the repair groups does not vary between 1981 and 1982 as the following table illustrates.

	1981	1982	Combined Average
Plumbing	33.54%	37.57%	35.80%
Doors	16.58%	17.03%	16.84%
Electrical	16.53%	14.66%	15.48%
Appliances	12.20%	11.97%	12.07%
Decorating	8.96%	7.22%	7.99%
H.V.A.C.	7.04%	6.17%	6.56%
Windows	4.19%	4.15%	4.17%
Other	.95%	1.22%	1.10%

Although the relative importance of the groups did not change from 1981 to 1982 there was a significant increase in the total number of recorded service call. Increases were noted in five of the six buildings while one indicated a decrease. Two of the five buildings had significant increases.

Building	Repairs 1981		Repairs 1982		Increase % 1981-82
Dunn Ave.	738	1.92/unit	1,929	5.02/unit	+ 161.38
Shuter St.	1,213	4.03/unit	1,061	3.52/unit	- 12.53
Oak St.	1,267	2.71/unit	1,409	3.01/unit	+ 11.21
Lawrence Ave.	1,223	5.74/unit	1,358	6.38/unit	+ 11.04
Woolner Ave.	837	2.75/unit	1,240	4.08/unit	+ 48.15
Bellevue Cres.	1,139	3.49/unit	1,198	3.67/unit	+ 5.18
Total	6,417	3.21/unit	8,195	4.11/unit	+ 27.71

A nominal increase in the number of recorded repair calls between 1981 and 1982 could be expected due to several factors, i.e. maintenance procedures are being standardized, buildings and their various components are a year older could be expected to have a few more problems, the format for recording service calls has been improved and the more recent data could be expected to be more complete. These general observations apply to all the buildings but there are unique factors that have considerable impact on specific buildings. Dunn Ave. building showed an increase of 161% in the number of service calls between 1981 and 1982. The Dunn Ave. building has a settling problem that is causing an increasing number of minor as well as major maintenance problems i.e. doors and windows don't fit properly, plaster is cracking, door latches need adjusting, increased heat calls due to poor fitting windows and doors, numerous minor electrical and plumbing problems, etc. This building's settling problem is unique but even more important is a change in site staff. A new maintenance supervisor who

introduced a number of changes in the maintenance procedures within the building in 1982. He is also very meticulous in his record keeping habits as he feels that accurate records are essential in order for him to know what's happening in his buildings. Although these two unique factors mentioned above may not account entirely for the dramatic increase seen in the number of service calls between 1981 and 1982, they do account for a large portion of it and brings the yearly per unit repair record more in line with the other buildings in this study.

PLUMBING REPAIRS

Without question plumbing repairs are the most dominant group within the six buildings surveyed. In total, plumbing related service calls average 35.8% of all the unit repair calls recorded. This represents 5,231 service calls over a two year period or an overall average of 1.3 plumbing calls per apartment per year. Within the six buildings the percentage of repairs comprised of plumbing problems varies from a high of 42% (Oak St.) to a low of 29% (Shuter St.).

a) Taps

There are three tap categories listed under plumbing. These are kitchen taps (KT @ 1,174 calls), bathroom basin taps (ST @ 676 calls) and bathtub taps (TA @ 474 calls). Together, these three categories comprise 44% of all the plumbing service calls. When this information is combined with the fact that toilet tank problems totalled 526 service calls, it is apparent that prevention of water wastage through various types of leaks is a major task.

The kitchen taps are much more frequently used than the other taps in the unit, which results in a substantially higher frequency of repairs. Emco taps are a very widely used make of tap and constitute the majority of taps in the six buildings surveyed. Site staff prefer Emco taps as they are reasonably durable and parts are readily available. Most of the taps are original equipment but with Ontario Housing Corporation building stock aging, it will eventually be necessary to replace entire fittings. Replacement taps are currently purchased at the project level from local hardware stores, plumbing supply stores and salesmen who frequent the buildings. With few exceptions Emco taps are used for replacement in order to continue with the present line of product thus eliminating potential inventory problems that might result from the installation of different makes of taps. In-house staff perform 97% of the tap related service calls.

A detailed review of the data indicated that on a significant number of occasions call backs to the same unit resulted within a relatively short time of the original service call. In some cases contractors were ultimately used to solve problems although in-house staff will usually inspect and attempt to resolve the problem wherever possible before calling a contractor.

Plumbing Repairs
(combined 1981-82 data)

Unit Type (#)	Kitchen Tap	Kitchen Sink	Basin Tap	Bath. Basin	Toilet Tank	Toilet Bowl	Toilet Seat	Shower Head	Tub Taps	Bath-tub	Bath-tub Basin	Shut off	Misc.
Bachelor (512)	255	48	160	55	145	96	48	63	107	14	2	18	143
One bedroom (864)	520	133	281	119	224	113	92	110	193	32	5	16	253
Two bedroom (563)	347	146	210	140	145	197	73	82	158	58	10	24	178
Three bedroom (51)	52	24	24	14	12	18	11	5	15	2	4	0	15
Four bedroom (4)	0	2	1	7	0	4	0	4	1	1	1	0	1
Total (1994)	1,174	353	676	335	526	428	224	264	474	107	22	58	590
% by staff	97	80	97	90	95	79	99	95	95	96	77	67	93
% by contractor	3	20	3	10	5	21	1	5	5	4	23	33	7

Site staff indicate that the servicemen who perform the plumbing repairs are not trained on a regular basis but do occasionally attend a two week course for updating and improvement of skills. It is possible that regular hands-on training for tap repairs would be beneficial in reducing some of the ongoing plumbing problems.

b) Sinks

The service calls comprised of kitchen sinks (KS @ 353 calls) and bathroom basins (SB @ 335 calls) were largely due to blockages and leaks. Site staff indicate it is often children who are responsible for putting things down the sinks that cause blockages. To a lesser degree tenant ignorance is a cause of the blockage since some people don't know what should not be put down the drains. The statistics found in Table II tend to confirm the suggestion that children are primary cause of drain and toilet bowl blockages as the incidence of repairs in the larger family type units is more than double that of the smaller adult occupied units.

c) Toilets

The toilet related problems are toilet bowls (TB @ 428 calls), toilet tanks (TT @ 526 calls) and toilet seats (TS @ 224 calls). Toilet bowl service calls are largely due to blockages with the frequency of service calls being twice as high in the family type units as compared to the adult occupied units. Toilet seat problems bear little or no relationship to the child population and with 224 repairs out of 1994 units over two years do not represent a significant workload. Toilet tank problems, on the other hand with 526 service calls, not only contribute substantially to the workload, but also contribute to the waste of water.

d) Bathtubs

The bathtub related service calls are the result of bathtub repairs (BT @ 107 calls), bathtub drain repairs (BD @ 22 calls), showerhead repairs (SH @ 264 calls) and tap repairs (TA @ 474 calls). Drains do not appear to be a concern with 22 calls and bathtub taps are covered under the tap section. There were 264 repairs or replacements of showerheads which seems to be a problem. Site staff feel that the new water saver showerheads cause more problems than the ordinary type, as the smaller holes tend to become blocked more readily. The 107 service calls attributed to tub repairs were largely comprised of recaulking around the tub. In the few cases where the porcelain was actually damaged, reglazing of the damaged sections was carried out.

e) Shut Offs

There were 58 repairs to shutoffs recorded which does not seem out of line in view of the sizeable number of shutoffs contained with the 1,994 units surveyed.

f) Plumbing Miscellaneous

At first glance the plumbing miscellaneous category seems large at 590 service calls but it is composed of a myriad of unrelated repairs. Typically it is comprised of the repair or replacement of towel bars, soap dishes, grab bars, drain plugs, mirrors, shower curtain rods, basin legs, complaints about a lack of hot water, etc. In all of the six buildings the staff arranged to install grab bars where it was evident that they were needed by elderly or handicapped people.

Suggested Methods of Reducing Service Calls and Costs

Considering the high number of plumbing related service calls, it is evident that a great amount of time, money and water could be saved if a reduction in the number of problems were achieved. There are a number of options that should be considered.

1. Almost all of the existing taps in the six buildings studied were made by Emco. If the use of Emco taps is continued it may be worthwhile to use their heavy duty cartridge and seat replacement parts where possible or have heavy duty fittings installed as replacement equipment. The heavy duty parts and fittings have a larger washer and seat area and should extend the service free life of the taps.

2. There are numerous other plumbing supply companies, i.e. Waltec, American Standard, Jameco, Crane, Delta and Kohler, that supply a variety of fittings that may be as good as or better than the Emco line. Considering the number of plumbing fittings that exist within the highrise buildings owned by Ontario Housing Corporation and the fact that fully one third of all the service calls are plumbing related, it would seem prudent to research the area of plumbing fitting performance in order to obtain the best quality at reasonable cost. Generally speaking, the heavy duty models of taps are only slightly more expensive than the standard residential taps and other products that have only recently been introduced may also give better performance for the price.

3. The existing plumbing fittings or parts of the fittings will have to be replaced in time and the volume of repairs and replacements might make a central purchasing system viable and achieve considerable savings. A central supply system would also be able to maintain a variety of approved types and makes while still realizing volume cost savings.

4. It is noted that almost 93% of plumbing related repairs are carried out by in-house staff. Hands on training should be provided on a regular basis in order to upgrade skills, inform them of new products and procedures and provide them with a forum to share their experience and expertise. An annual or semi annual in-house training seminar may well be worth the time invested.

5. Aside from installing more cost effective plumbing fittings it would seem that some tenant education is in order. Often the landlord

assumes that a tenant knows how to operate the plumbing system, i.e. do not overtighten taps, do not put cooking grease and hair down the sink, do not put certain items down the toilet, do not use towel bars as grab bars, etc. Many tenants are from different countries and cultures where things may be done differently. Site staff report that no attempt is made to educate the tenants other than what is contained in the tenant handbook that is distributed during initial leasing. Some sort of tenant education or awareness on a regular basis would assist those families that are creating problems out of ignorance rather than negligence or intent. A tenant letter, issued once or twice a year may be of great assistance in order to keep tenants informed, i.e. reminding them of safety items, energy conservation and other matters of interest to the tenant and housing authority.

6. A detailed review of the unit plumbing data indicated that on a significant number of occasions call-backs to the same unit resulted within a relatively short time of the original service call. There were generally two reasons for this. The original problem was not satisfactorily resolved thus requiring further attention or the tenant called about another problem. In the first instance repeat calls may be reduced by having better skilled servicemen as the result of proper training. In the latter circumstance, call backs may have been avoided if the servicemen had checked the other plumbing fittings while on the initial call.

7. Site staff indicate that tenants are being charged for repairs that are obviously the result of tenants misuse or abuse of the equipment, i.e. plugged toilets and sinks, broken mirrors, towel bars and shower curtain rods, etc. This should encourage tenants to maintain their unit properly, monitor their children's activities more closely and teach them how to operate the various plumbing fixtures.

8. In two of the six buildings site staff perform annual unit inspections. This gives the staff the opportunity to identify problems before they become serious and is also useful for purposes of identifying those that fail to report a problem or damage to the unit caused by themselves or their guests.

DOOR RELATED REPAIRS

Door related repairs constituted 2,460 service calls which represents 16.8% of the total unit repairs. It was found that door related problems bear a significant relationship to a building's child population; the higher the number of children, the higher the number of repairs. Unfortunately, five of the six buildings surveyed have significant populations of senior citizens which is not typical of most highrise buildings operated by the Metropolitan Toronto Housing Authority. Only the Lawrence Ave. building could be considered a typical family oriented highrise which means that our sample group of buildings would tend to under emphasize the severity of door related problems.

Door Related Repairs

Unit Type (#)	Closet Door	Ensuite Door	Balcony Door	Storm Door	Entrance Door	Lock Out	Lock Change	Door Misc.
Bachelor (512)	35	14	61	36	44	39	155	68
One bedroom (864)	141	20	122	75	137	32	278	88
Two bedroom (563)	299	75	88	94	87	47	293	59
Three bedroom (51)	37	11	12	9	8	0	23	5
Four bedroom (4)	3	2	0	1	1	0	3	9
Total (1994)	502	120	273	210	270	117	741	227

The table above indicates clearly that the ratio of repair per unit in most categories is much higher in the larger family oriented units. Discussions with site staff indicate that there are other factors that contribute to the high number of door related problems; including the type of doors used, rate of tenant turnover, age of the building and problems unique to a particular building. In-house staff were responsible for 94% of the door related repairs.

a) Closet Doors

The five door categories constitute 1,375 (56%) of the 2,460 door related repairs. The closet doors at 502 incidents is the largest of the five. There are numerous types of closet doors in use, i.e. sliding doors, bifold doors and hollow core hinged type. Site staff indicate that bifold doors are the most troublesome, sliding doors are the second and hinged doors cause the least trouble. The Lawrence Ave. building has a particularly heavy wooden bifold door type that seems too heavy for the track hardware. This building has the highest closet door repair ratio (209 repairs/213 units/2 years = .491) of the six buildings surveyed. The Oak St. building has hinged closet doors and only two reported closet door repairs. The other significant difference between these two buildings is the child population. Statistics confirm that closet door repairs in the larger family type units are a much more serious problem.

Closet Doors

Type of Unit	Repair Ratio	
Bachelor	(35 repairs/512 units/2 years = .034)	typically
One bedroom	(141 repairs/864 units/2 years = .082)	adult units
Two bedroom	(299 repairs/563 units/2 years = .266)	typically
Three bedroom	(37 repairs/51 units/2 years = .363)	family
Four bedroom	(3 repair/4 units/2 years = .375)	units

Closet door repairs in the family type units are almost four times that of the adult type units.

b) Insuite Doors

Due to the small number of repairs to bedroom, bathroom, and other insuite doors they were all lumped together as one category. Although the number of repairs is not high it is obvious that most of the 120 repairs were in the family units. It was also noted during data input that there were many instances of damage to the doors caused by abuse.

c) Balcony Doors

The 273 balcony door repairs are fairly evenly spread out among the buildings and various unit types. Most of the repairs are due to warpage or hardware problems.

d) Storm Doors

The 210 recorded storm door repairs are largely comprised of screen repairs. There are some glass and hardware problems but they constitute a smaller portion. Aging of the buildings might necessitate more screen repairs while the larger family units have problems with abuse as well as age.

e) Suite Entrance Doors

At 270 repair calls, entrance doors are the second highest door repair category. Lock changes were classified separately. Some typical entrance door repairs involved hinge repairs, planing, installation or repair of peepholes and letterslots, adjustments to keepers, etc. The Dunn Ave. building has settling problems that cause door jamming and misaligned keepers, consequently planing and other adjustments are required. The larger units have higher repair ratios which could be due to more frequent use and to a lesser degree, abuse.

f) Lock outs

A lockout is recorded when site staff are required to provide a tenant access to their apartment in circumstances where the tenant has lost or misplaced their key. Over the years entrance door locks have been changed to the deadbolt type which effectively prevents tenants from locking themselves out. In the few instances where tenants do misplace their keys they are charged for replacement keys. A further charge is recorded if a staff member is required to help the tenant after hours. The combination of deadlocks and tenant charges are reported to have resulted in significant decreases in the number of lockout problems over the years. In 1981 there were 63 lockouts recorded in the 1,996 units included in the survey. In 1982 these were reduced to 54.

g) Lock Changes and Repair

This category encompasses lock repairs, and lock changes as well as installation of chain locks. Almost 400 of the 741 reported lock related problems are due to lock changes that occur with every change of tenancy. In 1981 the overall tenant turnover rate was 9.7% with the family unit turnover rate being higher than that of senior citizens. Sometimes tenants will be concerned about a lack of security due to a misplaced key and ask for the lock to be changed. In this case the tenant is charged $15.00 for a lock change unless the lock is faulty. The remaining lock related problems are largely repairs due to normal wear and tear. The service calls for the family units are significantly higher for two reasons; the moveout rate is higher and they suffer from more wear and tear.

h) Door Miscellaneous

The door miscellaneous category at 227 reported service calls is largely comprised of key replacements as all of the tenant requests for replacement or extra keys are recorded here. Four of the six buildings have key cutting machines which are used to produce keys for the needs of the tenants and staff. Tenants are charged $3.00 for a replacement key. The other two buildings have extra keys cut by a contractor as required.

Suggested Methods of Reducing Service Calls and Costs

The type of problems that result in door related service calls are not easy to resolve. Yet, the fact that more than 2,400 door related repair calls occurred in 1981 and 1982 indicates that they are time consuming and in this respect, expensive. The following are a few suggestions that may help to reduce the number of door related service calls.

1. It is apparent that bifold doors and to a lesser extent sliding doors are a problem. It may be worthwhile to study the cost effectiveness of changing from bifold to sliding or hinged doors. If this were prohibitively expensive another alternative may be that of overcoming the hardware problems. A search for more durable hardware may result in increased longetivity of the bifold or sliding doors. It may even be possible to have parts produced specifically for M.T.H.A. in view of the large number of units that are affected by this problem. Volume purchases may result in cost savings.

2. It is apparent that the larger family units have considerably more problems than the smaller units. It may be worthwhile to enlist the assistance of the tenants in reducing the damage to doors. This may be done by promoting tenant education and consistent charges for damage.

3. Installation of peepholes is a common tenant request. Perhaps they should be installed in all doors on a contract basis. It would provide added security for the tenants and free the serviceman to attend to other tasks.

4. Not all the buildings studied had key cutting machines. It would appear that they may be a worthwhile investment depending on the frequency of key replacements.

5. The present practice of charging tenants for lockouts, key replacements and damage should be continued. Staff in one building expressed concern that tenants are not being charged the actual cost of lockout service, i.e. an on-site caretaker is entitled to three hours wages at overtime rates if called out after 1:00 a.m. or on a day off. Perhaps a more equitable charge should be considered.

6. Mail slots in doors create many different problems, i.e. vandalism, repairs, burglary, invasion of privacy, etc. If at all possible the mail slots should be closed off and a central mail room system provided.

ELECTRICAL REPAIRS

Electrical repairs constitute 15.5% or 2,262 of the total repair calls recorded. Eighty two percent of the repairs are performed by in-house staff. Those at the buildings indicated that general servicemen were limited to working with 110 volt systems. Work on 220 volt systems or panel repairs are generally left to licensed electricians.

Electrical Repairs

Unit Type (#)	Intercom	Smoke Detector	Light Fixture	Switch/ Outlet	Panel	Power Out	Electrical Misc.
Bachelor (512)	48	48	143	72	31	15	73
One bedroom (864)	114	97	311	132	72	44	140
Two bedroom (563)	87	96	234	140	100	101	92
Three bedroom (51)	6	6	18	15	8	4	8
Four bedroom (4)	1	1	1	0	1	1	2
Total (1994)	256	248	707	359	212	165	315

a) Intercoms

The service calls for intercom repairs - noted under unit repairs pertain only to problems identified as being in the suites. Problems with the main intercom panel located in the lobby are classified as project repairs. There were 256 recorded intercom problems with a higher ratio of problems identified among the family size units. It was also noted in discussions with site staff that the child population has a considerable impact on problems with vandalism of the main lobby panel. Problems with intercom components located in the suites are reported to be largely due to normal wear and tear. Of the 256 service calls, 174 were carried out by contractors. The 82 repair calls carried out by in-house staff were generally reported to be problems of a minor nature such as a stuck call button or a loose wire.

Mirtone systems were used in four of the buildings while two of them had the new Lockwood panel installed that is designed to reduce problems due to vandalism. The Woolner Ave. building had the Lockwood panel installed in 1982 and it is reported to have had some initial teething problems although it seems to work quite satisfactorily now. It should be noted that intercom repair calls in this building dropped from 63 in 1981 to 30 in 1982. The Lawrence Ave. building also has the new Lockwood panel installed but its installation is too recent to be able to gauge its impact. It would be well worthwhile to monitor these new systems in order to measure their long term performance.

b) Smoke Detectors

In total 248 of approximately 2,000 smoke detectors in the six buildings were repaired or replaced in 1981 and 1982. Site staff indicate that over sensitivity is a problem although the majority of replacements are due to the unit failing to operate. There were numerous makes of smoke detectors in use and all of them were of the ionization type. The source of repair or replacement varies from building to building. Three of the buildings in the study group generally have the in-house staff repair or replace smoke detectors while the other three largely use contractors. In discussions with site staff it was noted that some Maintenance Supervisors consider smoke detectors to be safety equipment requiring the use of a licensed electrician. The majority of Maintenance Supervisors though endorse the use of in-house staff for all minor electrical repairs including smoke detectors.

A list of the various smoke detector makes and models used in Ontario Housing Corporation buildings is circulated to the site staff which also indicates the failure rate of each type. This is certainly of great assistance in determining what make of smoke detector to purchase for replacement equipment. The Ontario Housing Corporation Safety Co-ordinator advises that the general policy is to replace defective smoke detectors with an ionization type unit except in circumstances where problems exist, i.e. proximity to the kitchen. In this circumstance a combination ionization/photoelectric type with an adjustable degree of sensitivity is used. The ionization type are specified as their design lend itself to earlier detection of fire situations. The smoke detectors are cleaned and inspected on an annual basis. The six buildings surveyed used contractors to perform the annual smoke detector inspections.

Smoke detectors are presently purchased at a local level or are supplied by the electrician in cases where the electrician does the installation.

Overall, the 248 smoke detectors repaired or replaced represents a failure rate of 6.2% per year.

c) Light Fixtures

The largest portion of electrical service calls are related to light fixture problems. At 707 calls it represents 31.2% of the electrical repair group. The most common complaints are loose fixtures, broken light globes, arcing and light bulbs broken off in the fixture. There is a higher incidence of repairs in the larger units but this may be due to the fact that there are more fixtures in the larger units (see Table II). The Shuter St. building is the only building that has fluorescent fixtures in the units. It does not seem to have any impact on the number of fixture problems but it does have an apparent impact on the Electrical Miscellaneous category which we will look at later. Approximately 96.0% of all fixture repairs are performed by in-house staff and very few call backs were noted.

Light fixtures are presently purchased at the local level in all six buildings surveyed.

d) Switches/Outlets

This category is the second highest in the repair group with 359 of the 2,262 total electrical repairs. Most of the problems were switch related rather than outlet related. It is apparent from the statistics (Table II) that larger units have a much higher frequency of problems as compared to the smaller. In-house staff performed 93.0% of the repairs.

e) Panel Repairs

The panel repair category contains information on major panel work as well as simple problems with fuses, fuse rejectors and the new dual element fuses. The simple problems comprise the majority of panel repairs which explains why 75% of the panel repairs were performed by in-house staff. The Lawrence Ave. and Bellevue Cres. buildings have problems with bending buss bars.

Two buildings have dual element fuses only in the smoke detector circuit, one has them in all the circuits, two buildings are on circuit breakers and one building has partially changed over to dual element fuses in all the suite circuits. The staff of the building with the dual element fuses used throughout, noted an increase in the number of panel service calls due to the tenants not being able to identify a burnt out dual element fuse. Fuse rejectors were installed in five of the six buildings. Site staff note that sometimes the tenants remove them or problems occur when they do not seat properly or tenants try to "force" a higher amperage fuse into the panel.

Statistics (Table II) indicate that the larger units suffer from a higher incidence of panel problems. Site staff feel that this is due to a greater number of blown fuses caused by faulty electrical appliances and the tendency to overload circuits.

f) Power Outs

In circumstances where a full or partial power failure occurred and inadequate documentation of the problem was recorded that would enable identification of the source of the problem, it was cateogrized as a "power out". In fact, it would seem that most of the power outs were due to fuse problems and a lesser amount to other more complicated problems. Incomplete information on the work orders did not allow more in-depth review. The larger family type units had a much higher incidence of repairs which is similar to the situation described under the Panel category. The fact that 78% of the power outs were remedied by in-house staff is also indicative of the relatively simple nature of the panel repairs.

g) Electrical Miscellaneous

This category is largely made up of simple lightbulb and fuse replacements as well as problems associated with the cable television systems. Often senior citizens and handicapped tenants are not able to replace light bulbs or fuses themselves. The in-house staff will assist upon request with the tenant providing the replacement item. The Shuter St. building accounts for 115 of the 315 Electrical Miscellaneous repair calls. It has fluorescent lights in the kitchens of every unit which tenants find difficult to replace. The cable television contracts that existed in 1981 and 1982 are being allowed to expire which will eventually eliminate any involvement by in-house staff as far as cable television or system maintenance is concerned. This may account for the drop in the number of calls between 1981 and 1982.

In-house staff performed 98% of the repairs under this category.

Suggested Methods of Reducing Service Calls and Costs

In total there were 2,262 electrically related repair calls recorded which represents 15.5% of the total service calls. They not only represent a significant amount of time and money but they also involve an element of safety in that faulty electrical systems are a recognized cause of fires in residential premises. Some suggested improvements include:

1. Overall, 82% of the electrical repairs were carried out by in-house staff. As a general rule they are not allowed to work with anything higher than 110 volt systems but even 110 volts can be dangerous. The servicemen should be well schooled in electrical repair with special emphasis given to the safety aspects of working with electrical systems.

2. Tenants should be educated and reminded on a regular basis about common sense safety practices in order to overcome such common problems as overfusing, octopus connections, overloaded circuits, removal of fuses from smoke detector circuits, overlamping, use of defective appliances, overtightening light bulbs, etc. Ontario Hydro has pamphlets available on the proper use of electricity in the house which may be ideal for distribution to tenants. An

increased awareness on the part of the tenant could not only reduce service calls, it could also increase safety in the apartments.

3. A careful selection of better quality replacements such as the new intercom panels and identification of the better quality smoke detectors will certainly yield beneficial results. This process could be extended into the area of light fixtures, outlets and switches in that better quality products which provide more durability for the price could be researched, identified and used.

4. In the six buildings studied there were 1,314 service calls related to the repair or replacement of smoke detectors, switches, outlets and light fixtures. A significant number of these service calls involved replacement. The use of a centralized purchasing system on a district or Metro-wide basis may prove cost effective. It would also ensure that approved replacement parts are used.

5. There appears to be a need to clarify the policy regarding installation or replacement of smoke detectors. As smoke detectors operate on 110 volt A.C. current their installation is generally no more difficult or complicated than that of an outlet or switch. They can be tested to ensure that they are operating properly in the same manner that they are checked on an annual basis. The result of an in-house installation and testing policy would result in significant savings.

6. As noted previously, there seems to be some inconsistency in the installation of dual element fuses in the suite electrical panels. The policy regarding the use and installation of dual element fuses needs clarification.

7. The use of fluorescent lighting in suites as indicated by the Shuter St. building should be reviewed. The payback period based on the energy savings has to be updated by the inclusion of staff time consumed in the provision and replacement of bulbs. Site staff also commented that fluorescent lights might not be compatible with senior citizens' failing eyesight. Perhaps more in-depth research on this matter is required.

APPLIANCES

At 1,764 recorded incidents, appliance repairs represent 12.1% of the total service calls. Stove repairs (ST @ 1,186 calls) were double the refrigerator repairs (FR @ 579 calls). This is not unusual as stoves are typically more complex and more often used. Most of the appliances are reported to be original equipment with their average age between 11 and 16 years. Replacements are ordered through a central purchasing system. Seventy-nine percent of the repairs are carred out by in-house staff, i.e. general serviceman or appliance serviceman.

The general serviceman is usually assigned to one or two buildings or projects whereas an appliance serviceman is usually shared on a district basis. The dependability of different makes of appliances in use vary and availability of parts is sometimes a problem for older models. Site staff report that older units are often cannabalized for parts when they are replaced.

a) Refrigerators

The 579 refrigerator repair calls that were recorded are not uniformly spread about the six buildings surveyed. The Shuter St. building has the highest frequency of repairs (142 calls) while the Oak St. building has the lowest (52 calls). There are several reasons for these variations including the age and make of appliance as well as the type of unit in which it is installed. It is apparent that the larger family units have the highest repair ratios which is largely due to a greater use.

Refrigerators

Type of Unit	Repair Ratio		
Bachelor	(86 repairs/512 units/2 years)	= .084)	typically
One bedroom	(205 repairs/864 units/2 years)	= .119)	adult units
Two bedroom	(268 repairs/563 units/2 years)	= .238)	typically
Three bedroom	(26 repairs/51 units/2 years)	= .255)	family
Four bedroom	(6 repairs/4 units/2 years)	= .750)	units

There are a wide variety of makes and models in use but we were not able to determine which were the most dependable.

Common problems with refrigerators include broken crisper glass, faulty temperature control, broken shelf attachments, punctured evaporator lines (sometimes resulting in destruction of the compressor) and broken freezer doors. In-house staff perform 76% of the repairs with the more complicated repairs being left to contractors. Self defrosting refrigerators were not used in any of the buildings studied.

b) Stoves

Of all the individual categories recorded, stove repairs are the highest at 1,186 repair calls. This translates into an annual repair rate of 30%. The repair rate is much higher again in the larger family units which can be attributed to the higher rate of use.

Stoves

Type of Unit	Repair Ratio		
Bachelor	(161 repairs/512 units/years)	= .157	) typically
One bedroom	(421 repairs/864 units/years)	= .244	) adult units
Two bedroom	(532 repairs/563 units/2 years)	= .472	) typically
Three bedroom	(89 repairs/51 units/2 years)	= .873	) family
Four bedroom	(10 repairs/4 units/2 years)	= 1.25	) units

Some of the new models of stoves have more easily replaced components enabling in-house staff to carry out a larger portion of the repairs. Many of the apartment units are having the "quick disconnect" outlets installed which will enable the in-house staff to disconnect the 220 volt power supply more easily and safely. Overall, 80% of the stove repairs were performed by in-house staff with considerable variation from building to building. Some of the most common problems are fuses, burnt out elements, loose connections and broken controls.

Suggested Methods of Reducing Repair Call and Costs

1. Where an applicance serviceman is used on a shared basis a system is needed to ensure that there is a fair and equal distribution of his time.

2. The general servicemen and appliance servicemen should go through a regular updating process in order to maintain and improve their skills.

3. Tenant charges for damage should continue to discourage carelessness and abuse. It is still necessary to provide tenant information in order to reduce the number of unnecessary problems caused by ignorance, i.e. punctured evaporators, melted or sprung freezer doors.

4. Use of self defrosting refrigerators would reduce the number of problems caused by inappropriate defrosting methods but increased purchase costs may not warrant the change and repair cost associated with crisper glass, shelf attachments will still appear.

5. The installation of "quick disconnect" plug outlets for the stoves should enable general servicemen to service more stoves as they are generally not allowed to service 220 volt equipment for safety reasons.

6. In view of the volume and variety of appliances that are in use in M.T.H.A. operated buildings and the fact that many will be reaching the end of their economically useful life, M.T.H.A. will be faced with increased replacement costs. In a rental housing operation of this size it may be worthwhile to monitor the performance of the various makes in order to identify the most reliable equipment for use as replacements. The Energuide rating should also be considered.

7. Perhaps the volume of appliances and repairs would warrant an increase in the number of appliance servicemen. This would reduce the number of expensive contractor service calls and leave more time for the general serviceman to perform other vital tasks. Further study would be required in order to determine the cost effectiveness.

DECORATING

The statistics found in the decorating repair group are not truly representative of the actual decorating related repairs performed. The only painting that we have recorded is the touchup painting after plaster repairs. All of the moveout and cyclical painting was tendered and therefore not recorded. The other decorating categories are relatively accurate and are useful for the purposes for which they were intended.

Decorating Repairs

Unit Type (#)	Paint	Walls/ Ceilings	Floors	Cupboards	Countertop
Bachelor (512)	1	82	25	21	24
One bedroom (864)	1	216	31	42	23
Two bedroom (563)	10	328	73	131	83
Three bedroom (51)	2	47	9	22	9
Four bedroom (4)	0	7	0	5	0
Total (1994)	14	662	137	216	138

a) Paint

As previously mentioned this category is not accurate.

b) Walls/Ceilings

This section is comprised of plaster and ceramic tile repairs. The total number of repairs is high at 662 but the majority of problems can be attributed to buidings that have particular problems such as Shuter St. (241 calls), Lawrence Ave. (144 calls) and Woolner Ave. (113 calls). The Shuter St. and Woolner Ave. buildings are suffering from "blowouts" which result from moisture getting between the plaster base and finish coats. The Lawrence Ave. building staff report that there are problems with water penetration in the bathrooms. Other causes are accidental floods, vandalism and intentional plaster damage required to carry out other necessary repairs.

The majority of plaster work (76%) is performed by contractors. Site staff only do minor plaster repairs. Site staff indicate that vandalism is a problem in the family units and in the public areas.

c) Floors

There were 137 reported incidents of floor repairs. The majority of repairs were in the family size units with Lawrence Ave., a family occupied building, accounting for 65 of the 137 reported problems. The problems found are caused by moisture be it either leaky plumbing, window, balcony door or on occasion inappropriate floor care.

d) Cupboard Repairs

There were 216 reported incidents of cupboard repairs. The majority of repairs were in the family size units which is further reinforced by the fact that the Lawrence Ave. building accounts for 91 of the 216 reported problems. This would indicate the cupboard repairs may be a more serious or evident problem if the sample group were comprised of typical family oriented buildings. Statistics indicate that 88% of repairs were performed by in-house staff.

e) Countertops

The 138 countertop repairs recorded are very similar in nature to the cupboard situation in that they are more characteristic of the family type units. Only 34% of the repairs were performed by in-house staff.

Suggested Methods of Reducing Decorating Costs and Repairs

1. There are plaster repair problems in several of the buildings that are being done on an individual basis using different methods. Perhaps it would be less costly if they were tendered. More effective repairs may be realized if the problems were investigated thoroughly by qualified persons and an approved method of repair used.

2. It is apparent that the tenants or their guests are often responsible for damaging the plaster, cupboards, countertops, etc. One of the most effective methods of discouraging this to to charge them for the damage. Annual unit inspections are a very useful method of discovering tenants who are abusing their apartments as it may otherwise not be reported or discovered until they move out. Tenants should be charged the actual cost of repair.

H.V.A.C.

The heating, ventilation and air conditioning repairs that are recorded are only the ones that had a direct impact on one or more of the units directly. None of the buildings have central air conditioning although some of the tenants install their own units for their own use. It is apparent that complaints about the heating system are the largest category in this group. It is also interesting to note that 96% of the H.V.A.C. repairs were performed by in-house staff.

Heating, Ventilation and Air Conditioning

Unit Type (#)	Fan/Vents	Heating System	Weatherstrip
Bachelor (512)	21	251	47
One bedroom (864)	44	325	47
Two bedroom (563)	22	186	37
Three bedroom (51)	0	0	1
Four bedroom (4)	0	5	1
Total (1994)	85	744	129

a) Fans/Vents

There were 85 reported problems with the fans and vents in our survey group. These problems were relatively evenly distributed among the various unit types. Vent problems were usually noted as being due to cleaning of the vent or water entering the unit through the vent. The fans are located in the kitchen and bathroom and are part of a central exhaust system. Ninety-two percent of repairs were performed by in-house staff.

b) Heating System

There were 744 heating complaint calls recorded with the adult only apartment group constituting the majority of calls. This is not unusual as senior citizens often feel cold despite the reasonable temperatures being maintained in the building. Many of the complaints stem from too much or too little heat were valid and were

the result of the malfunction of the heating system. There were also a number of cases in which the problems were caused by such things as the curtains or furniture blocking the radiators, orientation of the apartment, open windows, faulty weatherstripping, etc.

c) Weatherstripping/Caulking

This is largely done on an as required basis when the tenants complain about drafts. There were only 129 recorded instances of weatherstripping or caulking. Although it doesn't seem to be a problem from the point of view of tenant complaints it may be a problem from the energy conservation viewpoint.

Suggested Methods of Reducing Calls and Costs

1. Heating problems that are self generated, i.e. blocked radiators, open windows, etc. could be reduced if the tenants were better informed and staff checking on the heating problem assessed the difficulty before calling for specialized help.

2. Proper weatherstripping is very important not only from the aspect of tenant comfort but also from the point of view of heat loss. As the building stock gets older the weatherstripping will need to be replaced. From an energy viewpoint weatherstripping likely needs replacing long before it gets to the point that tenants complain about drafts. An inspection of the buildings should be done in order to determine the condition of the existing weatherstripping and caulking and have it replaced if necessary.

WINDOW REPAIRS

The window repair group is made up of screen, glass and window hardware repairs. This group represents 4.2% of all the recorded unit repairs and 84% of the repairs are carried out by in-house staff. Four of the six buildings do the glazing repairs in-house and all of the buildings have the screen repairs done in-house. The statistics indicate that family units have a much higher incidence of window and screen repairs.

Window Repairs

Unit Type (#)	Screens	Glass	Hardware
Bachelor (512)	23	21	25
One bedroom (864)	76	50	77
Two bedroom (563)	110	73	107
Three bedroom (51)	14	21	7
Four bedroom (4)	4	5	2
Total (1994)	227	170	212

a) Window Screens

Statistics show that 94% of screen repairs are performed by in-house staff. Screens do get older and wear out but the figures indicate that the rate of repair in family units is much higher than that of senior citizens' units. Vandalism is an important factor in the family units.

b) Glass Repairs

The glass repair situation is very similar to the screen situation in that glass repairs are far more prevalent in the larger family units, i.e. if the Lawrence Ave. building were considered typical of the sample group the total would more than double. It should also be noted that the 170 glass repairs in the units does not include all the glass damage that occurs in the public areas.

c) Window Hardware

There were 212 incidents involving the repair or replacement of window hardware. The repairs are fairly evenly spread about the buildings but the larger family units have a higher frequency of repair. This category is comprised of repairs to hinges, curtain rods, window lock mechanisms, slides, etc.

Suggested Methods of Reducing Repair Calls and Costs

1. The majority of problems in this group are caused by the tenants or their guests. The key to the reduction of service calls lies with the tenants in that they and their guests have to be discouraged from damaging the glass and screens. Tenant charges tend to discourage vandalism and it also provides extra income to cover the cost of repairs.

SUMMARY

The survey group was comprised of six highrise apartment buildings that were typical of Ontario Housing Corporation owned highrises operated in the Metropolitan Toronto area except that five of the six buildings had significant senior citizen populations. The frequency of certain repairs such as decorating, intercom repairs, window repairs and door repairs have a significant relationship to the child population. The number of repairs in these categories is lower than in an all family building.

It was originally intended that the survey would include statistics on both the public area and ensuite repairs. The public area or "Project Repair" records for 1981 were compiled (found in Table IV) but found to be largely incomplete. This rendered them relatively useless from the point of view of analysis and thereby the 1982 project repairs were not processed. The records of ensuite repairs or "Unit Data" were found to be substantially complete with the site staff estimating them to represent 85% of the events taking place.

The results of the data analysis can be found in the various tables and graphs found in the appendix of this report. The table on page 28 is a summary by repair group for each building.

There were 14,612 service calls recorded in 1981 and 1982 and the six buildings totalled 1,994 apartment units. This averages 3.66 service calls per unit per year. The repair per unit ratio varies considerably among the various unit types, i.e.

	Bachelor Unit	One Bedroom	Two Bedroom	Three Bedroom	Four Bedroom	Average
Repairs Per Unit Per Year	2.81	3.18	5.27	6.07	11.63	3.66

Usually the bachelor and one bedroom units are occupied by senior citizens or handicapped tenants. Occasionally, they are occupied by single mothers with an infant child. The two, three and four bedroom units are family units. In light of this information and the table above it is apparent that the composition of tenants have a major impact on the number of repairs required on a per unit basis, with family units having a higher repair per unit per year ratio.

Eighty-five percent of the repairs were performed by in-house staff, i.e. heating, appliance and general servicemen, while the remaining 15% were contracted. Suggestions for reducing repair calls and costs are outlined in detail for each of the repair groups under its own title. The following suggestions are more general in nature.

1. During data input it was noted that callbacks to the same unit, within a relatively short time, occurred on numerous occasions. This was especially noticeable in the plumbing repair group. Time and cost could be saved, if during the initial visit, the serviceman were able to inspect the unit and attend to other minor problems found by them.

2. As the in-house staff performed 12,466 of the 14,611 repairs recorded in this survey it is apparent that they play a major role in the upkeep of the buildings. In order to maximize their efficiency it would seem prudent to provide a regular system of hands-on training and skills upgrading with special emphasis on maintenance categories that are identified as being a major problem, i.e. plumbing. Training courses should be designed to provide for the needs of M.T.H.A. maintenance staff.

3. It was noted that some of the existing maintenance staff are being used on a shared basis. Heating and appliance servicemen as well as fumigation technicians are being used to service several or all of the building projects within a district. It was also noted that during times of peak workload they were being supplemented by the use of contractors. A system of recording the volume and types of services used in routine maintenance would enable managers to identify how many staff of a particular classification could be effectively used and how to assign the work in an evenly distributed fashion.

4. Although it is recognized that some tenants do not have any interest in learning about the correct operation of their apartment it should also be remembered that there are a number of tenants who would like to think that they are good tenants. For the benefit of those persons an annual or semi-annual tenant bulletin containing information on safety, energy conservation, maintenance tips and items of interest would be useful. As each building has a unique character with its own set of problems it may be better if it were issued on a project basis. Letters that are already circulated regularly such as the Christmas Safety letter may be expanded upon.

5. Tenants who cause damage due to negligence or intent should be charged for damage. The tenant charge should realistically reflect the cost of repairs and be used on a consistent basis in order to be an effective deterrent and offset the cost of repairs.

Repairs by Group Total

(1981 and 1982 combined)

	Electrical	Plumbing	Windows	Doors	Appliances	Decorating	H.V.A.C.	Other	Total
Lawrence Ave.	402	1,086	81	523	266	62	240	7	2,667
Shuter St.	354	667	82	392	383	314	81	1	2,274
Oak St.	361	1,115	75	364	181	110	400	70	2,676
Lawrence Ave.	353	842	180	521	342	310	33	0	2,581
Woolner Ave.	331	637	114	311	320	244	37	83	2,077
Bellevue Cres.	461	884	77	349	272	127	167	0	2,337
Total	2,262	5,231	609	2,460	1,764	1,167	958	161	14,612

6. Annual unit inspections were only carried out in two of the six buildings surveyed. Some site staff feel that servicemen attend to problems in most of the units throughout any given year thus constituting a "semi-inspection". Lack of time was cited as a major problem. The service calls do not effectively constitute an inspection as a thorough review of the unit's various components is not performed and there is no documentation on file. During data input it was noted that numerous apartment units had no recorded service calls in any given year thus negating the assumption that all units are visited by staff at least once each year. Unit inspections are essential for the prompt identification and repair of various types of maintenance, safety and energy related problems. Other benefits are sometimes realized such as the identification of illegal tenants and tenants who are damaging the unit. The documentation generated by proper unit inspections is often very helpful to property management staff in their dealings with tenants who are damaging the units. Tenants who are damaging the unit may otherwise go undiscovered until the time of moveout which makes the collection of tenant charges more difficult. The importance of annual inspections should be emphasized and priorities established in such a fashion as to enable the staff in all buildings to carry them out. Perhaps the monitoring of unit inspections at the district level would be of assistance. (In the two buildings where the inspections are performed, they are carried out simultaneously with the smoke detector cleaning and inspection in order to minimize cost and not to burden the tenant unnecessarily.)

7. Where replacement items are required on a regular basis, i.e. electrical switches, light fixtures, taps, window and door hardware, a special effort should be made to identify equipment that requires minimum maintenance and provides maximum longetivity.

   The performance of large costly items such as stoves and refrigerators should be monitored (in a similar manner to that used to monitor smoke detector performance) in order to identify quality equipment. Characteristics such as suitability, durability and energy efficiency should be considered in this evaluation and the information can then be used as a basis for purchases of new or replacement equipment.

8. Items such as smoke detectors, locks, electrical fixtures, taps and window and door hardware could be purchased in volume in order to reduce costs. This would entail the institution of a storage and distribution system whose costs may offset some of the savings realized from volume purchases. For this reason it would be wise to investigate this matter in more detail.

9. The Planned Maintenance Program (P.M.P.) was noted to be in effect in three of the buildings, one had it partially implemented and the other two reported that they were not involved in the program on a formal basis. It appeared that different methods of implementing the P.M.P. were in effect in each district. One had a district based P.M.P. crew perform the maintenance (until recently), others had the district office circulate a P.M.P. checklist to each

building with the completed checklist being returned after the site staff and/or contractors performed the assigned tasks and others were simply left on their own. The merits of the Planned Maintenance Program have been long reorganized but the effective and systematic implementation of it appears to be lacking. It is recommended that a more effective method of ensuring the program is used should be identified.

10. During the site visits, discussion included the topic of budget systems and maintenance. The present budget submission format requires quite detailed information with each budget category being broken down into numerous sub categories. Yet, the budget output is in a format that only provides financial information about fairly broad maintenance categories. The result is that Maintenance Supervisors must do a physical check of an entire year's maintenance records in order to obtain the bulk of information required for budget input if it is to genuinely reflect historical patterns. Leafing through an entire year's worth of paperwork is quite time consuming and a "guestimate" generally the result. A system that would more adequately reflect the needs of the field staff should be explored and instituted.

11. It has taken the researchers 10 months to collect, analyze and report the findings. The majority of this time was devoted to data collection. Data was collected from work records at numerous locations with more than half of it not usable. A development and institution of a detailed budgetary system would have gleaned information allowing management to focus their attention in the necessary direction in a fraction of the time. The results of any action taken on the report findings can only be gauged if a similar lengthy study is undertaken or a detailed budgetary system is instituted. This report has touched only on some aspects of operation costs and only a tool, like a detailed budgetary system, will allow for constant review of costs.

TABLE I -1981 REPAIRS BY GROUP TOTAL

DORR AVE.	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL	% OF BUILDING REPAIRS	UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	111.0	251.0	34.0	127.0	103.0	23.0	85.0	5.0	738.00		150 FAMILY	80 CHILDREN	1.93 REPS/UNIT	1973	6	5
% OF TOTAL	15.0	34.4	4.1	17.2	14.0	3.1	11.5	0.7	100.00		232 SENIORS 2 OFFICES	188 ADULTS 240 SENIORS	1.30 PERSONS/UNIT			
CUSTODIAN	66.0	209.0	22.0	106.0	33.0	7.0	82.0	4.0	529.00	71.6%	384 UNITS	528 TOTAL				
% OF TOTAL	12.5	39.5	4.2	20.0	6.2	1.3	15.5	0.8	100.00							
CONTRACT	45.0	45.0	0.0	21.0	70.0	16.0	3.0	1.0	209.00	28.4%						
% OF TOTAL	21.5	21.5	0.0	10.0	33.5	7.7	1.4	0.5	100.00							

SUMTER ST	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	193.00	330.00	45.00	241.00	240.00	164.00	21.00	0.00	1213.00		132 FAMILY	110 CHILDREN	4.03 REPS/UNIT	1954	3	3
% OF TOTAL	15.89	26.38	3.71	19.79	14.49	13.52	5.03	0.00	100.00		169 SENIORS OFFICES	125 ADULTS 175 SENIORS	1.63 PERSONS/UNIT			
CUSTODIAN	152.00	298.00	45.00	230.00	161.00	41.00	49.00	0.00	976.00	82.1%	301 UNITS	490 TOTAL				
% OF TOTAL	15.58	29.92	4.52	23.50	16.50	4.12	5.02	0.00	100.00							
CONTRACT	30.00	22.00	0.00	2.00	39.00	123.00	1.00	0.00	217.00	17.9%						
% OF TOTAL	13.82	10.14	0.00	0.92	17.97	56.68	0.46	0.00	100.00							

OAK ST.	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	173.00	535.00	35.00	151.00	95.00	41.00	199.00	52.00	1282.00		112 FAMILY	0 CHILDREN	2.71 REPS/UNIT	1972/73	5	6
% OF TOTAL	13.49	41.74	2.76	12.00	7.43	3.20	15.50	4.10	100.00		352 SENIORS OFFICES	117 ADULTS 178 SENIORS	1.66 PERSONS/UNIT			
CUSTODIAN	153.00	496.00	29.00	142.00	84.00	24.00	187.00	48.00	1163.00	91.0%	448 UNITS	295 TOTAL				
% OF TOTAL	13.16	42.65	2.49	12.21	7.22	2.06	16.08	4.13	100.00							
CONTRACT	20.00	43.00	6.00	11.00	0.00	17.00	3.00	4.00	104.00	8.2%						
% OF TOTAL	19.23	41.35	5.77	10.58	0.00	16.35	2.88	3.85	100.00							

LAWRENCE AVE	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	177.00	419.00	77.00	238.00	153.00	148.00	19.00	0.00	1223.00		199 FAMILY	235 CHILDREN	5.74 REPS/UNIT	1969	1	1
% OF TOTAL	14.47	34.28	6.30	19.81	12.51	12.10	1.55	0.00	100.00		14 SENIORS OFFICES	244 ADULTS 16 SENIORS	2.61 PERSONS/UNIT			
CUSTODIAN	150.00	376.00	52.00	213.00	71.00	91.00	14.00	0.00	767.00	79.1%	213 UNITS	556 TOTAL				
% OF TOTAL	19.51	30.20	5.38	22.03	7.34	9.31	1.25	0.00	100.00							
CONTRACT	27.00	45.00	25.00	17.00	82.00	57.00	3.00	0.00	256.00	20.9%						
% OF TOTAL	10.55	17.58	9.77	6.64	32.03	22.27	1.17	0.00	100.00							

WOOLNER AVE	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	122.00	217.00	49.00	122.00	99.00	165.00	15.00	4.00	812.00		121 FAMILY	235 CHILDREN	2.75 REPS/UNIT	1960	2	2
% OF TOTAL	21.15	26.16	5.93	15.99	11.71	17.20	1.59	0.48	100.00		113 SENIORS OFFICES	242 ADULTS 131 SENIORS	2.01 PERSONS/UNIT			
CUSTODIAN	108.00	145.00	39.00	98.00	95.00	20.00	13.00	4.00	562.00	64.7%	304 UNITS	810 TOTAL				
% OF TOTAL	19.93	30.44	7.20	18.08	17.53	3.69	2.40	0.74	100.00							
CONTRACT	69.00	54.00	0.00	34.00	3.00	126.00	2.00	0.00	295.00	35.3%						
% OF TOTAL	23.39	18.31	0.00	11.53	1.02	42.03	0.68	0.00	100.00							

BELLEVUE	1981 ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO	BUILT	REPAIR RATIO RATING	POP. DENSITY RATING
# REPAIRS	240.00	481.00	34.00	183.00	145.00	55.00	42.00	0.00	1139.00		189 FAMILY	70 CHILDREN	3.46 REPS/UNIT	1972	4	4
% OF TOTAL	21.07	35.21	2.99	15.98	12.73	4.83	7.20	0.00	100.00		217 SENIORS OFFICES	150 ADULTS 273 SENIORS	1.51 PERSONS/UNIT			
CUSTODIAN	213.00	348.00	33.00	181.00	141.00	31.00	77.00	0.00	1065.00	93.5%	326 UNITS	493 TOTAL				
% OF TOTAL	20.00	33.28	3.10	17.00	13.52	2.91	7.23	0.00	100.00							
CONTRACT	21.00	21.00	1.00	1.00	1.00	24.00	5.00	0.00	74.00	6.5%						
% OF TOTAL	28.38	28.38	1.35	1.35	1.35	32.43	6.76	0.00	100.00							

TOTAL	ELEC.	PLUMB	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL		UNITS	POPULATION	REPAIR RATIO
# REPAIRS	1041.00	2152.00	269.00	1044.00	783.00	596.00	452.00	61.00	6412.00		893 FAMILY	907 CHILDREN	3.21 REPS/UNIT
% OF TOTAL	16.53	33.54	4.19	16.58	12.20	8.96	7.04	0.95	100.00		1101 SENIORS 2 OFFICES	1118 ADULTS 1255 SENIORS	1.51 PERSONS/UNIT
CUSTODIAN	842.00	1922.00	220.00	970.00	580.00	216.00	435.00	56.00	5242.00	82.0%	1996 TOTAL	3180 TOTAL	
% OF TOTAL	16.13	36.53	4.18	18.59	11.17	4.07	8.27	1.06	100.00				
CONTRACT	212.00	230.00	49.00	86.00	195.00	361.00	17.00	5.00	1155.00	18.0%			
% OF TOTAL	18.35	19.91	4.24	7.45	16.88	31.26	1.47	0.43	100.00				

TABLE II - 1981 REPAIRS BY UNIT TYPE

				INTERCOM	SMOKE DETECTOR	LIGHT FIXTURE	SWITCH	PANEL	POWEROUT	ELECT. MISC.	KITCHEN TAP	KITCHEN SINK	BASIN TAP	BASIN	TOILET TANK	TOILET BOWL	TOILET SEAT	SHOWERHEAD	TUB TAPS	TUB	TUB DRAIN	SHUT-OFF	PLUMBING MISC.	WINDOW SCREEN	GLASS	WINDOW HARDWARE	CLOSET DOOR	ENSUITE DOOR	BALCONY DOOR	STORM DOOR	ENTRANCE DOOR	LOCKOUT	LOCK CHANGE/REP	DOOR MISC.	FRIDGE	STOVE	PAINT	WALL/CEILING	FLOOR	CUPBOARD	COUNTERTOP	FAN/VENT	HEAT SYSTEM	FUMIGATE	WEATHERSTRIP/CAU	TOTAL
DOWN AVE.	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	BACH(30)	13	60	0	0	2	2	1	1	0	6	0	6	5	3	1	2	4	4	0	0	0	1	0	1	0	2	2	2	0	4	1	3	0	5	3	1	0	2	1	2	0	5	1	0	73
	ONEBED(266)	133	351	5	11	23	18	7	9	8	44	14	25	18	9	7	11	8	9	2	0	2	11	6	6	11	19	5	14	4	22	1	27	0	11	44	0	5	2	3	0	2	55	4	2	484
	TWOBED(78)	44	117	0	1	11	5	4	3	0	8	5	8	5	3	1	5	2	9	5	2	1	8	3	0	3	6	0	2	0	7	0	5	1	11	29	0	1	4	2	0	4	17	0	0	101
TOTAL	UNITS(302)	210	528	5	12	36	25	12	13	8	50	19	39	28	15	9	18	14	22	7	2	3	20	9	7	14	27	7	18	4	33	2	35	1	27	76	1	6	8	6	2	6	77	5	2	738
SHUTER ST	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	BACH(65)	32	188	3	0	2	3	0	0	14	11	2	9	2	10	2	0	4	5	0	0	0	0	2	2	1	3	0	0	0	6	3	11	1	11	10	0	12	2	1	2	1	3	0	2	140
	ONEBED(156)	89	466	11	5	26	11	4	2	39	37	25	7	12	19	12	6	10	5	4	1	0	11	12	4	6	1	0	8	12	22	7	37	0	41	49	0	60	0	4	7	11	16	0	3	555
	TWOBED(65)	74	321	10	3	10	8	1	3	14	15	11	10	11	9	6	4	6	8	7	3	0	3	4	1	2	12	9	6	6	12	11	36	8	25	41	0	47	3	5	8	0	14	0	5	397
	THREEBED(11)	9	65	0	1	5	2	0	0	1	5	1	2	1	1	4	0	1	4	1	1	0	2	2	4	0	2	0	0	2	0	0	3	3	1	15	0	5	1	3	0	0	0	0	1	74
	FOURBED(4)	0	39	1	1	0	0	1	1	1	0	0	1	5	0	1	0	1	1	0	0	0	1	1	4	0	1	1	0	0	1	0	0	0	2	5	0	2	0	2	0	0	4	0	1	47
TOTAL	UNITS(301)	214	999	25	10	43	24	6	6	69	68	39	29	31	39	25	10	22	23	12	5	0	17	21	15	9	19	10	14	20	41	21	87	20	80	120	0	126	6	15	17	12	37	0	12	1213
OAK ST.	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	BACH(312)	70	743	12	7	61	11	5	2	14	71	14	53	21	41	35	16	13	33	1	0	11	43	4	9	3	0	2	12	9	7	9	41	23	15	38	0	10	8	3	0	7	95	39	15	821
	ONEBED(156)	26	420	0	1	44	7	2	1	6	43	9	30	10	19	9	8	8	21	2	0	1	27	5	6	8	0	2	8	2	5	3	15	15	8	23	0	9	3	0	0	5	64	13	4	446
TOTAL	UNITS(468)	104	1163	12	8	105	18	7	3	20	114	23	83	31	60	44	24	21	54	3	0	12	70	9	15	11	0	4	20	11	12	12	56	38	23	61	0	19	11	3	8	12	159	52	19	1267
LAURENCE	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	ONEBED(20)	22	66	0	2	2	1	6	1	2	6	4	5	7	2	0	1	0	1	1	0	3	4	2	6	1	4	0	2	1	1	1	5	1	2	3	0	5	3	1	2	0	0	0	0	80
	TWOBED(169)	197	805	6	23	46	31	13	18	13	76	27	39	44	27	47	7	13	25	7	0	10	24	22	17	15	69	6	20	14	18	8	48	4	35	99	7	48	9	28	20	1	8	0	10	1002
	THREEBED(24)	36	97	0	2	3	3	2	1	2	13	5	5	6	0	3	3	0	3	0	0	0	1	5	6	1	10	3	2	3	2	0	7	1	5	9	2	12	1	0	2	0	0	0	0	133
TOTAL	UNITS(213)	255	968	6	27	51	35	21	20	17	95	36	49	57	29	50	11	13	29	8	0	13	29	29	31	17	83	9	24	18	21	9	60	6	42	111	9	65	13	37	24	1	8	0	10	1223
WOOLNER AVE	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	BACH(17)	7	31	4	1	1	1	2	1	0	1	1	0	1	0	1	0	0	0	3	0	0	2	2	0	1	0	0	0	1	0	0	4	1	2	3	0	1	1	1	0	0	0	1	1	38
	ONEBED(145)	90	199	34	2	7	10	6	7	8	12	3	5	9	5	13	5	3	3	10	0	0	6	7	2	3	1	1	7	7	4	8	22	2	16	26	0	12	6	2	9	1	4	1	0	289
	TWOBED(126)	176	273	24	6	11	6	12	23	6	9	8	8	21	6	22	1	8	8	0	0	7	14	16	6	8	8	4	2	10	4	5	27	4	18	22	0	42	25	8	21	1	7	2	1	449
	THREEBED(16)	22	39	1	0	1	1	1	0	1	3	4	2	0	2	1	2	0	0	0	0	0	2	1	1	1	4	2	1	0	1	0	1	1	4	7	0	8	4	2	2	0	0	0	0	61
TOTAL	UNITS(304)	295	542	63	9	20	18	21	31	15	25	16	15	31	13	37	8	11	11	21	0	7	24	26	9	13	13	7	10	18	9	13	54	8	40	58	0	63	36	13	32	2	11	4	2	837
BELLEVUE	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
	JUNIOR(88)	17	258	13	8	4	9	6	4	11	30	6	22	2	12	2	7	1	17	1	0	0	9	5	1	2	8	4	9	3	1	3	14	4	9	15	0	6	4	1	1	1	17	0	3	275
	ONEBED(121)	17	378	11	13	18	15	10	7	15	40	10	21	3	22	7	4	0	21	2	0	0	18	5	0	4	15	1	8	9	2	1	16	8	15	40	0	13	0	2	0	2	14	0	3	395
	TWOBED(125)	40	429	10	10	16	22	17	13	8	34	19	18	4	8	8	9	4	14	3	0	0	23	8	4	5	20	5	6	11	4	2	21	7	26	40	0	13	5	2	8	2	39	0	1	469
TOTAL	UNITS(326)	74	1065	34	31	38	46	33	24	34	104	35	61	9	42	17	20	5	52	6	0	0	50	18	5	11	43	10	23	23	7	6	51	19	50	95	0	32	9	5	9	5	70	0	7	1139
	UNIT TYPE	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
512 @ 25.7%	BACH	147	1200	32	16	70	26	14	8	39	119	23	90	31	66	41	25	22	59	5	0	11	55	13	13	7	13	8	23	13	10	16	73	29	42	69	1	29	17	7	13	9	120	41	21	1347
844 @ 43.3%	ONE	377	1980	61	34	120	62	35	27	78	182	65	93	59	76	48	35	29	60	21	1	6	77	37	24	33	60	9	47	35	56	21	122	34	93	185	0	104	14	12	18	21	153	18	12	2257
563 @28.2%	TWO	553	1945	50	43	94	72	47	60	41	142	70	83	85	53	84	26	33	64	30	5	18	72	53	28	33	115	24	36	41	45	26	137	24	115	231	7	151	46	45	57	9	85	2	17	2498
51 @ 2.6%	THREE	67	201	1	3	9	6	3	1	4	21	10	9	7	3	8	5	1	7	1	1	0	5	8	13	2	14	5	3	5	3	0	11	5	10	31	2	25	6	13	4	0	0	0	1	260
4 @ .2%	FOUR	8	39	1	1	0	0	1	1	1	0	0	1	5	0	1	0	1	1	0	0	0	1	1	4	0	1	1	0	0	1	0	0	0	2	5	0	2	0	2	0	0	4	0	1	47
1994 @ 100%	TOTAL	1152	5265	145	97	293	166	100	97	163	464	168	276	187	190	182	91	86	191	57	7	35	210	112	82	75	185	47	109	94	123	63	343	100	262	521	10	311	83	79	92	38	362	61	52	6417

TABLE III - 1981 REPAIRS BY SOURCE

				INTERCOM	SMOKE DETECTOR	LIGHT FIXTURE	SWITCH	PANEL	POWEROUT	ELECT. MISC.	KITCHEN TAP	KITCHEN SINK	BASIN TAP	BASIN	TOILET TANK	TOILET BOWL	TOILET SEAT	SHOWERHEAD	TUB TAPS	TUB	TUB DRAIN	SHUT-OFF	PLUMBING MISC.	WINDOW SCREEN	GLASS	WINDOW HARDWARE	CLOSET DOOR	ENSUITE DOOR	BALCONY DOOR	STORM DOOR	ENTRANCE DOOR	LOCKOUT	LOCK CHANGE/REP	DOOR MISC.	FRIDGE	STOVE	PAINT	WALL/CEILING	FLOOR	CUPBOARD	COUNTERTOP	FAN/VENT	HEAT SYSTEM	FURNIGATE	WEATHERSTRIP/CAU	TOTAL
DUNN AVE.	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN	0	520	0	3	28	19	5	3	0	54	6	39	22	11	5	10	14	17	5	0	0	10	0	2	12	27	2	10	3	19	2	34	1	9	24	0	1	4	2	0	4	77	4	1	529
REPAIR BY	CONTRACTOR	210	0	5	9	9	6	7	10	0	4	13	0	6	4	4	0	0	5	2	2	3	2	1	5	2	0	5	0	1	14	0	1	0	10	53	1	5	4	4	2	2	0	1	1	210
SUBTOTAL		210	520	5	12	37	25	12	13	0	58	19	39	28	15	9	10	14	22	7	2	3	20	9	7	14	27	7	10	4	33	2	35	1	27	77	1	6	0	6	2	6	77	5	2	730
SOUTER ST.	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN	0	999	3	10	39	23	4	5	69	42	39	26	29	38	21	10	22	19	11	5	0	16	21	15	9	10	10	14	20	41	21	87	27	61	100	0	17	3	15	6	12	36	0	12	996
REPAIR BY	CONTRACTOR	214	0	22	0	4	1	2	1	0	6	0	3	2	1	4	0	0	4	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1	19	20	0	109	3	0	11	0	1	0	0	217
SUBTOTAL		214	999	25	10	43	24	6	6	69	48	39	29	31	39	25	10	22	23	12	5	0	17	21	15	9	19	10	14	20	41	21	87	28	80	120	0	126	6	15	17	12	37	0	12	1213
OAK ST.	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN	0	1163	5	2	104	10	3	1	20	109	22	79	30	58	37	24	21	51	2	0	7	56	9	9	11	0	4	16	11	7	12	55	37	23	61	0	12	6	2	4	12	156	48	19	1163
REPAIR BY	CONTRACTOR	104	0	7	6	1	0	4	2	0	5	1	4	1	2	7	0	0	3	1	0	5	14	0	6	0	0	0	4	0	5	0	1	1	0	0	0	7	5	1	4	0	3	4	0	104
SUBTOTAL		104	1163	12	8	105	10	7	3	20	114	23	83	31	60	44	24	21	54	3	0	12	70	9	15	11	0	4	20	11	12	12	56	38	23	61	0	19	11	3	8	12	159	52	19	1267
LAURENCE	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIRS BY	CUSTODIAN	0	948	4	27	46	29	14	13	17	93	27	46	53	24	35	11	11	20	8	0	11	27	25	11	16	79	7	22	13	17	9	60	6	14	57	0	25	12	32	14	1	5	0	10	967
REPAIRS BY	CONTRACT	255	0	2	0	5	6	7	7	0	2	9	3	4	5	15	0	2	1	0	0	2	2	4	20	1	4	2	2	5	4	0	0	0	28	54	1	40	1	5	10	0	3	0	0	255
SUBTOTAL		255	948	6	27	51	35	21	20	17	95	36	49	57	29	50	11	13	29	8	0	13	29	29	31	17	83	9	24	18	21	9	60	6	42	111	1	65	13	37	24	1	8	0	10	1223
HOOLIHER	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIRS BY	CUSTODIAN	0	542	5	6	20	17	10	20	14	23	9	15	10	9	18	7	7	11	21	0	4	23	25	2	12	8	3	9	10	2	13	46	7	40	55	0	6	3	7	4	0	11	4	2	542
REPAIRS BY	CONTRACTORS	295	0	58	3	0	1	3	3	1	2	7	0	13	4	19	1	4	0	0	0	3	1	1	7	1	5	4	1	8	7	0	8	1	0	3	0	57	33	6	20	2	0	0	0	295
SUBTOTAL		295	542	63	9	20	18	21	31	15	25	16	15	31	13	37	8	11	11	21	0	7	24	26	9	13	13	7	10	18	9	13	54	8	40	58	0	63	36	13	32	2	11	4	2	837
BELLEVUE	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN		1065	20	30	38	45	30	22	34	101	34	40	6	42	11	20	5	50	6	0	0	45	10	5	10	42	10	23	23	7	6	51	19	49	95	0	17	7	5	2	5	45	0	7	1065
REPAIR BY	CONTRACTOR	74		14	1	0	1	3	2	0	3	1	1	3	0	6	0	0	2	0	0	0	5	0	0	1	1	0	0	0	0	0	0	0	1	0	0	15	2	0	7	0	5	0	0	74
SUBTOTAL		74	1065	34	31	38	46	33	24	34	104	35	41	9	42	17	20	5	52	6	0	0	50	10	5	11	43	10	23	23	7	6	51	19	50	95	0	32	9	5	9	5	70	0	7	1139
TOTAL	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN		5265	37	70	275	151	74	72	162	442	137	265	150	102	127	90	80	176	53	5	22	105	106	44	70	174	36	102	90	93	63	333	97	196	392	8	70	35	63	30	34	350	56	51	5261
REPAIRS BY	CONTRACTORS	1152		108	19	19	15	26	25	1	22	31	11	29	16	55	1	6	15	4	2	13	25	6	38	5	11	11	7	14	30	0	10	3	66	130	2	233	48	16	62	4	12	5	1	1155
TOTAL		1152	5265	145	97	294	166	100	97	163	464	168	276	187	198	182	91	86	191	57	7	35	210	112	82	75	185	47	109	94	123	63	343	100	262	522	10	311	83	79	92	38	362	61	52	6416
PERCENT	1981	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PB	WS	GL	HW	CL	ES	BA	BG	ER	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FH	SY	SP	WS	SI
REPAIR BY	CUSTODIAN	0	100	26	80	94	91	74	74	99	95	82	96	84	92	78	99	93	92	93	71	63	88	95	54	93	94	77	94	85	76	100	97	97	75	75	80	25	42	80	33	89	97	92	98	82
PERCENT																																													
REPAIRS BY	CONTRACTORS	100	0	74	20	6	9	26	26	1	5	18	4	16	8	30	1	7	8	7	29	37	12	5	46	7	6	23	6	15	24	0	3	3	25	25	20	75	58	20	67	11	3	8	2	18

TABLE I - 1982 REPAIRS BY GROUP TOTAL

DUNN AVE. 1982	ELEC.	PLUMB.	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL	% OF BUILDING
# REPAIRS	291.00	832.00	51.00	396.00	143.00	39.00	155.00	2.00	1929.00	
% OF TOTAL	15.09	43.13	2.64	20.53	7.45	2.02	8.04	0.10	100.00	
CUSTODIAN	233.00	709.00	47.00	390.00	141.00	55.00	151.00	2.00	1767.00	
% OF TOTAL	13.19	44.25	2.66	22.07	7.98	6.79	8.55	0.11	100.00	91.6
CONTRACT	58.00	43.00	4.00	6.00	22.00	25.00	4.00	0.00	162.00	
% OF TOTAL	35.80	26.54	2.47	3.70	13.58	15.43	2.47	0.00	100.00	8.4

SHUTER 1982	ELEC.	PLUMB.	WINDOW	DOOR	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	171.00	347.00	37.00	153.00	103.00	150.00	20.00	1.00	1441.00
% OF TOTAL	16.12	32.70	3.49	14.33	17.25	14.14	1.89	0.09	100.00
CUSTODIAN	142.00	338.00	32.00	151.00	140.00	30.00	20.00	1.00	876.00
% OF TOTAL	16.21	38.58	4.22	17.24	15.89	4.45	2.28	0.11	100.00
CONTRACT	29.00	9.00	0.00	1.00	35.00	111.00	0.00	0.00	185.00
% OF TOTAL	15.68	4.82	0.00	0.54	18.92	60.00	0.00	0.00	100.00

OAK ST. 1982	ELEC.	PLUMB.	WINDOWS	DOORS	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	188.00	576.00	44.00	211.00	92.00	44.00	216.00	16.00	1487.00
% OF TOTAL	13.34	40.88	2.84	14.98	6.53	4.70	14.90	1.28	100.00
CUSTODIAN	142.00	541.00	40.00	206.00	92.00	32.00	198.00	17.00	1318.00
% OF TOTAL	12.29	42.58	3.03	15.63	7.38	2.81	15.02	1.29	100.00
CONTRACT	26.00	15.00	0.00	5.00	0.00	32.00	12.00	1.00	91.00
% OF TOTAL	28.57	16.48	0.00	5.49	0.00	35.16	13.19	1.10	100.00

LAURENCE AVE 1982	ELEC.	PLUMB.	WINDOWS	DOORS	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	176.00	423.00	103.00	291.00	195.00	142.00	14.00	0.00	1358.00
% OF TOTAL	12.96	31.13	7.58	21.43	13.92	11.93	1.03	0.00	100.00
CUSTODIAN	146.00	379.00	72.00	240.00	78.00	87.00	11.00	0.00	1033.00
% OF TOTAL	14.13	36.69	6.97	25.17	7.55	8.42	1.06	0.00	100.00
CONTRACT	30.00	44.00	31.00	31.00	111.00	25.00	3.00	0.00	325.00
% OF TOTAL	9.23	13.54	9.54	9.54	34.15	23.08	0.92	0.00	100.00

WOOLNER AVE. 1982	ELEC.	PLUMB.	WINDOWS	DOORS	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	155.00	418.00	44.00	179.00	222.00	104.00	22.00	77.00	1240.00
% OF TOTAL	12.42	33.71	3.52	14.24	17.90	8.06	1.77	6.37	100.00
CUSTODIAN	113.00	309.00	56.00	167.00	219.00	40.00	21.00	79.00	1082.00
% OF TOTAL	10.44	35.95	4.99	15.43	20.24	3.70	1.94	7.30	100.00
CONTRACT	41.00	29.00	12.00	12.00	3.00	60.00	1.00	0.00	158.00
% OF TOTAL	25.95	18.35	7.59	7.59	1.90	37.97	0.63	0.00	100.00

BELLEVUE 1982	ELEC.	PLUMB.	WINDOWS	DOORS	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	221.00	483.00	43.00	167.00	127.00	72.00	85.00	0.00	1198.00
% OF TOTAL	18.45	40.32	3.59	13.94	10.60	6.01	7.10	0.00	100.00
CUSTODIAN	204.00	467.00	43.00	166.00	123.00	41.00	85.00	0.00	1129.00
% OF TOTAL	18.07	41.36	3.81	14.70	10.89	3.63	7.53	0.00	100.00
CONTRACT	17.00	16.00	0.00	1.00	4.00	31.00	0.00	0.00	69.00
% OF TOTAL	24.64	23.19	0.00	1.45	5.80	44.93	0.00	0.00	100.00

TOTAL	ELEC.	PLUMB.	WINDOWS	DOORS	APPL.	DEC.	H.V.A.C.	OTHER	TOTAL
# REPAIRS	1201.00	3079.00	340.00	1396.00	981.00	592.00	506.00	100.00	8195.00
% OF TOTAL	14.66	37.57	4.15	17.03	11.97	7.22	6.17	1.22	100.00
CUSTODIAN	1000.00	2923.00	293.00	1340.00	806.00	258.00	486.00	99.00	7205.00
% OF TOTAL	13.88	40.57	4.07	18.60	11.19	3.58	6.75	1.37	100.00
CONTRACT	201.00	156.00	47.00	56.00	175.00	334.00	20.00	1.00	990.00
% OF TOTAL	20.30	15.76	4.75	5.66	17.68	33.74	2.02	0.10	100.00

	UNITS	POPULATION	REPAIR RATIO	POP. DENSITY	BUILT	R/R	P/R
DUNN AVE.	155 FAMILY 227 SENIOR 2 OFFICES 384 UNITS	85 CHILDREN 205 ADULTS 254 SENIORS 544 TOTAL	5.02 REPS/UNIT	1.42 PERSONS/UNIT	1973	2	5
SHUTER	126 FAMILY 127 SENIOR OFFICES 301 UNITS	122 CHILDREN 174 ADULTS 126 SENIORS 434 TOTAL	3.53 REPS/UNIT	1.44 PERSONS/UNIT	1969	5	3
OAK ST.	108 FAMILY 328 SENIOR OFFICES 440 UNITS	POPULATION 0 CHILDREN 116 ADULTS 382 SENIORS 498 TOTAL	3.01 REPS/UNIT	1.06 PERSONS/UNIT	1972/73	6	6
LAURENCE AVE	201 FAMILY 12 SENIOR OFFICES 213 UNITS	POPULATION 385 CHILDREN 244 ADULTS 14 SENIORS 563 TOTAL	6.38 REPS/UNIT	2.64 PERSONS/UNIT	1969	1	1
WOOLNER AVE.	191 FAMILY 113 SENIOR OFFICES 304 UNITS	POPULATION 220 CHILDREN 328 ADULTS 142 SENIORS 590 TOTAL	4.08 REPS/UNIT	1.97 PERSONS/UNIT	1968	3	2
BELLEVUE	109 FAMILY 217 SENIOR OFFICES 326 UNITS	POPULATION 72 CHILDREN 151 ADULTS 276 SENIORS 499 TOTAL	3.68 REPS/UNIT	1.53 PERSONS/UNIT	1972	4	4
TOTAL	898 FAMILY 1096 SENIOR 2 OFFICES 1996 UNITS	POPULATION 812 CHILDREN 1130 ADULTS 1254 SENIORS 3196 TOTAL	4.11 REPS/UNIT	1.60 PERSONS/UNIT			

TABLE II - 1982 REPAIRS BY UNIT TYPE

| 1982 DATA | | |

TABLE III - 1982 REPAIRS BY SOURCE

				IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
DUNN AVE	1982	CONTR	CUPE																																											
REPAIRS BY CUSTODIAN			1767	4	10	152	34	13	7	13	216	21	117	34	90	14	41	69	87	2	1	0	97	10	13	24	104	3	40	20	71	8	90	46	44	97	0	0	4	10	0	18	116	2	17	1767
REPAIRS BY CONTRACT		162		2	45	0	3	3	3	2	4	17	3	1	1	3	0	3	2	0	0	3	6	1	3	0	3	1	0	0	2	6	0	0	5	17	0	21	0	1	3	3	1	0	0	162
SUBTOTAL	384	162	1767	6	55	152	37	16	10	15	220	38	120	35	91	17	41	72	89	2	1	3	103	11	16	24	107	4	40	20	73	8	90	46	49	114	0	21	4	11	3	21	117	2	17	1929
SHUTER ST.	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIR BY CUSTODIAN			876	5	3	46	36	2	4	46	70	20	26	36	45	34	13	30	19	1	2	4	30	17	7	13	22	12	13	13	29	3	47	12	50	98	0	7	0	29	3	6	8	1	6	876
REPAIR BY CONTRACT		185		26	0	0	1	1	1	0	2	1	1	0	2	1	0	0	1	0	1	0	9	0	0	0	0	1	0	0	0	0	0	0	12	23	1	108	0	0	2	0	0	0	0	185
SUBTOTAL		185	876	31	3	46	37	3	5	46	72	29	27	36	47	35	13	30	20	1	3	4	30	17	7	13	22	13	13	13	29	3	47	12	62	121	1	115	0	29	5	6	8	1	6	1961
OAK ST.	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIRS BY CUSTODIAN			1318	9	7	80	28	2	1	35	119	26	70	20	63	50	35	35	32	3	0	8	100	12	9	19	2	1	36	20	12	22	75	38	29	68	0	14	7	11	5	12	150	17	36	1318
REPAIRS BY CONTRACT		91		7	18	0	0	1	0	0	0	3	0	1	1	4	0	0	0	0	0	2	4	0	0	0	0	0	0	0	1	0	4	0	0	0	0	22	5	2	3	0	12	1	0	91
SUBTOTAL		91	1318	16	25	80	28	3	1	35	119	29	70	21	64	54	35	35	32	3	0	10	104	12	9	19	2	1	36	20	13	22	79	38	29	68	0	36	12	13	8	12	162	18	36	1409
LAWRENCE	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIRS BY CUSTODIAN			1033	2	10	51	30	21	17	15	95	29	47	22	25	38	16	17	34	8	5	0	43	27	6	39	116	23	24	12	5	12	57	11	18	60	2	20	11	49	5	4	3	0	4	1033
REPAIRS BY CONTRACT		325		12	2	4	1	6	5	0	1	10	1	3	2	23	0	2	0	0	2	0	0	5	25	1	10	7	6	4	1	0	2	1	47	64	0	59	2	5	9	0	3	0	0	325
SUBTOTAL		325	1033	14	12	55	31	27	22	15	96	39	48	25	27	61	16	19	34	8	7	0	43	32	31	40	126	30	30	16	6	12	59	12	65	124	2	79	13	54	14	4	6	0	4	1358
WOODWARD	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIRS BY CUSTODIAN			1082	12	11	21	26	15	14	14	70	23	49	21	44	53	11	9	37	15	3	2	52	23	8	23	10	13	10	16	11	6	85	8	68	151	0	14	4	20	2	1	15	79	5	1082
REPAIRS BY CONTRACTOR		158		18	9	3	4	3	1	3	2	5	2	0	5	7	1	2	2	0	0	0	3	1	10	1	2	1	1	7	0	0	0	1	2	1	1	36	15	0	8	0	0	0	1	150
SUBTOTAL		158	1082	30	20	24	30	18	15	17	72	28	51	21	49	60	12	11	39	15	3	2	55	24	18	24	12	14	19	23	11	6	85	9	70	152	1	50	19	20	10	1	15	79	6	1240
BELLEVUE	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIR BY CUSTODIAN			1129	13	33	57	30	33	14	24	129	17	81	9	50	18	16	11	67	21	1	3	44	19	7	17	48	10	18	24	15	3	38	10	39	84	0	24	5	10	2	3	74	0	8	1129
REPAIR BY CONTRACTOR		69		1	3	0	0	12	1	0	2	5	3	1	0	1	0	0	2	0	0	1	1	0	0	0	0	1	0	0	8	0	0	0	3	1	0	26	1	0	4	0	0	0	0	69
SUBTOTAL		69	1129	14	36	57	30	45	15	24	131	22	84	10	50	19	16	11	69	21	1	4	45	19	7	17	48	11	18	24	15	3	38	10	42	85	0	50	6	10	6	3	74	0	8	1198
TOTAL	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIR BY CUSTODIAN			7205	45	74	407	184	86	57	147	699	144	390	142	317	207	132	171	276	50	12	17	366	100	50	135	302	62	157	105	143	54	392	125	240	550	2	79	31	129	17	44	366	99	76	7205
REPAIR BY CONTRACTOR		990		66	77	7	9	26	11	5	11	41	10	6	13	39	1	7	7	0	3	6	14	7	38	2	15	11	7	11	4	0	6	2	69	106	2	272	23	8	29	3	16	1	1	990
TOTAL		990	7205	111	151	414	193	112	68	152	710	185	480	148	330	246	133	178	283	50	15	23	380	115	88	137	317	73	164	116	147	54	398	127	317	644	4	351	54	137	46	47	382	100	77	8195
TOTAL	1982	CONTR	CUPE	IT	SR	LF	SW	PA	PO	ER	KT	KS	ST	SB	TT	TB	TS	SH	TA	BT	BD	SU	PR	WS	GL	HW	CL	ES	BA	DS	EN	LO	LC	DR	FR	ST	PT	WA	FL	CB	TP	FN	SY	SP	WS	SI
REPAIR BY CUSTODIAN																																													
PERCENT		12		41	49	98	95	77	84	97	98	78	98	96	97	84	99	96	98	100	80	74	96	94	57	99	95	85	96	91	97	100	98	98	78	84	50	23	57	94	37	94	96	99	99	88
REPAIR BY CONTRACTOR																																													
PERCENT			88	59	51	2	5	23	16	3	2	22	3	4	3	16	1	4	2	0	20	26	4	6	43	1	5	15	4	9	3	0	2	2	22	16	50	77	43	6	63	6	4	1	1	12

TABLE I COMBINED 1991-92 GROUP INFORMATION

	ELEC.	PLUMB.	WINDOW	DOOR	APPL.	DEC.	N.P.A.C.	OTHER	TOTAL	INCREASE 1991-92
BURR AVE.										
1991										
# OF SALES	115:0	95:0	4:0	177:0	112:0	3:0	11:0	0:0	428:00	161.38
% OF TOTAL	26.9	22.2	0.9	41.4	26.2	0.7	2.6	0.0	100.00	
1992										
# OF SALES	271:00	432:00	51:00	376:00	143:00	28:00	155:00	2:00	1129:00	
% OF TOTAL	24.00	38.28	4.52	33.30	12.67	2.48	13.74	0.18	100.00	
COMBINED										
# OF SALES	402:0	1006:0	81:0	523:0	244:0	62:0	240:0	7:0	2667:0	
% OF TOTAL	15.1	38.5	3.0	19.6	9.2	2.3	9.0	0.3	100.0	
SUMTER ST										
1991										
# OF SALES	183:00	520:00	43:00	318:00	200:00	145:00	41:00	0:00	1213:00	INCREASE 1991-92
% OF TOTAL	15.09	42.86	3.71	19.99	16.49	13.52	3.03	0.00	100.00	-12.53
1992										
# OF SALES	171:00	342:00	37:00	152:00	103:00	120:00	29:00	1:00	1061:00	
% OF TOTAL	16.12	32.24	3.49	14.33	9.71	11.31	2.73	0.09	100.00	
COMBINED										
# OF SALES	354:00	862:00	80:00	470:00	303:00	265:00	70:00	1:00	2274:00	
% OF TOTAL	15.57	37.91	3.51	20.67	13.32	11.65	3.08	0.04	100.00	
OAK ST.										
1991										
# OF SALES	113:00	503:00	19:00	153:00	92:00	13:00	18:00	5:00	1016:00	INCREASE 1991-92
% OF TOTAL	11.12	49.51	1.87	15.06	9.06	1.28	1.77	0.49	100.00	11.21
1992										
# OF SALES	193:00	526:00	9:00	211:00	57:00	42:00	21:00	1:00	1130:00	
% OF TOTAL	17.08	46.55	0.80	18.67	5.04	3.72	1.86	0.09	100.00	
COMBINED										
# OF SALES	306:00	1029:00	28:00	364:00	149:00	55:00	39:00	6:00	2146:00	
% OF TOTAL	14.26	47.95	1.30	16.96	6.94	2.56	1.82	0.28	100.00	
LAWRENCE AVE.										
1991										
# OF SALES	177:00	314:00	22:00	230:00	152:00	116:00	13:00	3:00	1027:00	INCREASE 1991-92
% OF TOTAL	14.47	25.68	1.80	18.81	12.43	9.49	1.06	0.25	100.00	11.04
1992										
# OF SALES	178:00	437:00	105:00	221:00	109:00	142:00	11:00	1:00	1204:00	
% OF TOTAL	14.78	36.29	8.72	18.36	9.05	11.79	0.91	0.08	100.00	
COMBINED										
# OF SALES	355:00	751:00	127:00	451:00	261:00	258:00	24:00	4:00	2231:00	
% OF TOTAL	15.91	33.66	5.69	20.21	11.70	11.56	1.08	0.18	100.00	
HOOLICK AVE										
1991										
# OF SALES	121:00	211:00	9:00	133:00	77:00	19:00	11:00	2:00	583:00	INCREASE 1991-92
% OF TOTAL	20.75	36.19	1.54	22.81	13.21	3.26	1.89	0.34	100.00	40.15
1992										
# OF SALES	153:00	418:00	44:00	172:00	222:00	109:00	27:00	23:00	1168:00	
% OF TOTAL	13.09	35.79	3.77	14.73	19.01	9.33	2.31	1.97	100.00	
COMBINED										
# OF SALES	274:00	629:00	53:00	305:00	299:00	128:00	38:00	25:00	1751:00	
% OF TOTAL	15.65	35.92	3.03	17.42	17.08	7.31	2.17	1.43	100.00	
BELLEVUE										
1991										
# OF SALES	231:00	415:00	31:00	183:00	145:00	93:00	63:00	2:00	1133:00	INCREASE 1991-92
% OF TOTAL	20.39	36.63	2.74	16.16	12.80	8.21	5.56	0.18	100.00	5.10
1992										
# OF SALES	221:00	481:00	9:00	162:00	122:00	72:00	85:00	1:00	1193:00	
% OF TOTAL	18.53	40.32	0.75	13.58	10.23	6.04	7.13	0.08	100.00	
COMBINED										
# OF SALES	452:00	896:00	77:00	345:00	267:00	165:00	148:00	3:00	2326:00	
% OF TOTAL	19.43	38.51	3.31	14.83	11.48	7.09	6.36	0.13	100.00	
TOTAL										
1991	ELEC.	PLUMB.	WINDOW	DOOR	APPL.	DEC.	N.P.A.C.	OTHER	TOTAL	
# OF SALES	1041:00	2152:00	207:00	1445:00	783:00	509:00	165:00	41:00	6442:00	
% OF TOTAL	16.16	33.41	3.21	22.43	12.16	7.90	2.56	0.64	100.00	
1992										
# OF SALES	1291:00	3073:00	349:00	1376:00	911:00	593:00	566:00	109:00	8153:00	
% OF TOTAL	15.83	37.69	4.28	16.88	11.17	7.27	6.94	1.34	100.00	
COMBINED										
# OF SALES	2210:00	5225:00	556:00	2440:00	1694:00	1102:00	731:00	150:00	14112:00	
% OF TOTAL	15.66	37.03	3.94	17.29	12.00	7.81	5.18	1.06	100.00	
% INCREASE 1991-92	13.20	43.00	26.39	31.20	25.29	2.96	11.95	43.93	27.71	

TABLE II REPAIRS BY UNIT TYPE 1981-82

			INTERCOM	SMOKE DETECTOR	LIGHT FIXTURE	SWITCH	PANEL	POWEROUT	ELECT. MISC.	KITCHEN TAP	KITCHEN SINK	BASIN TAP	BASIN	TOILET TANK	TOILET BOWL	TOILET SEAT	SHOWERHEAD	TUB TAPS	TUB	TUB DRAIN	SHUT-OFF	PLUMBING MISC.	WINDOW SCREEN	GLASS	WINDOW HARDWARE	CLOSET DOOR	ENSUITE DOOR	BALCONY DOOR	STORM DOOR	ENTRANCE DOOR	LOCKOUT	LOCK CHANGE/REP	DOOR MISC.	FRIDGE	STOVE	PAINT	WALL/CEILING	FLOOR	CUPBOARD	COUNTERTOP	FAN/VENT	HEAT SYSTEM	FUMIGATE	WEATHERSTRIP/CAU	TOTAL
1982																																													
NO. AND % OF	UNIT TYPE																																												
	(REPAIRS/UNIT)	CNTR	CNPE	IT	SB	LF	SB	PA	PB	EB	KT	KS	ST	SB	TT	TB	TS	SB	TA	BT	BB	SB	PB	WS	GL	WB	CL	ES	BA	BS	EB	LB	LC	BB	FR	ST	PT	WA	FL	CB	IP	FB	ST	SP	WS	SI
512 @ 25.5%	BACH(2.99/UNIT)	125	1400	16	32	73	44	17	7	34	136	25	70	24	79	55	23	41	48	9	2	7	88	10	0	10	22	4	30	23	26	23	82	39	44	92	0	53	0	14	11	12	131	15	26	1533
864 @ 43.3%	ONE(3.75/UNIT)	310	2930	53	63	191	70	37	17	42	338	48	100	40	140	65	57	81	133	11	4	10	176	39	26	44	101	11	75	40	81	11	156	54	112	236	1	112	17	30	5	23	172	28	35	3241
563 @ 28.2%	TWO(4.11/UNIT)	452	2573	37	53	140	60	53	41	51	205	76	127	55	92	113	47	49	94	20	5	6	106	57	45	74	104	51	52	53	42	21	156	35	153	301	3	177	27	86	26	14	101	51	20	3440
51 @ 2.6%	THREE(6.00/UNIT)	96	255	5	3	9	9	5	3	4	31	14	15	7	9	10	6	4	8	1	3	0	10	6	8	5	21	6	9	4	5	0	12	0	16	58	0	22	3	9	5	0	0	6	0	351
4 @ 2%	FOUR(11.5/UNIT)	7	39	0	0	1	0	0	0	1	0	2	0	2	0	3	0	3	0	1	1	0	0	3	1	2	2	1	0	1	0	0	3	1	4	5	0	5	0	3	0	0	1	0	0	46
1996 @ 100%	TOTAL(4.11/UNIT)	990	7205	111	151	414	193	112	68	152	710	185	400	148	328	246	133	178	283	50	15	23	380	115	88	137	317	73	144	116	147	54	398	127	317	664	4	351	54	137	46	47	382	106	77	8195
1981																																													
NO. AND % OF	UNIT TYPE																																												
	(REPAIRS/UNIT)	CNTR	CNPE	IT	SB	LF	SB	PA	PB	EB	KT	KS	ST	SB	TT	TB	TS	SB	TA	BT	BB	SB	PB	WS	GL	WB	CL	ES	BA	BS	EB	LB	LC	BB	FR	ST	PT	WA	FL	CB	IP	FB	ST	SP	WS	SI
512 @ 25.7%	BACH(2.63/UNIT)	147	1200	32	16	70	26	14	8	39	119	23	90	31	66	41	25	22	59	5	0	11	55	13	13	7	13	8	23	13	18	16	73	29	42	69	1	29	17	7	13	9	120	41	21	1347
864 @ 43.3%	ONE(2.61/UNIT)	377	1880	61	34	120	62	35	27	78	182	45	93	59	76	60	35	29	60	21	1	6	77	37	24	33	60	9	47	35	56	21	122	34	93	185	0	104	14	12	18	21	153	18	12	2257
563 @28.2%	TWO(4.44/UNIT)	553	1945	50	43	94	72	47	60	41	142	70	83	85	53	84	26	33	64	30	5	18	72	53	28	33	115	24	36	41	45	26	137	24	115	231	7	151	46	45	57	0	85	2	17	2490
51 @ 2.6%	THREE(5.25/UNIT)	67	201	1	3	9	6	3	1	4	21	10	9	7	3	0	5	1	7	1	1	0	5	0	13	2	16	5	3	5	3	0	11	5	10	31	2	25	6	13	4	0	0	0	1	268
4 @ .2%	FOUR(11.75/UNIT)	0	39	1	1	0	0	1	1	1	0	0	1	5	0	1	0	1	1	0	0	0	1	1	4	0	1	1	0	0	1	0	0	0	2	5	0	2	0	2	0	0	4	0	1	47
1994 @ 100%	TOTAL(3.22/UNIT)	1152	5265	145	97	293	144	109	97	163	464	148	276	107	198	182	91	86	191	57	7	35	210	112	82	75	185	47	109	94	123	63	343	100	262	521	10	311	83	79	92	30	362	61	52	6417
COMBINED	1981-82																																												
NO. AND % OF	UNIT TYPE																																											
	(REPAIRS/UNIT)	CNTR	CNPE	IT	SB	LF	SB	PA	PB	EB	KT	KS	ST	SB	TT	TB	TS	SB	TA	BT	BB	SB	PB	WS	GL	WB	CL	ES	BA	BS	EB	LB	LC	BB	FR	ST	PT	WA	FL	CB	IP	FB	ST	SP	WS	SI
512 @ 25.7%	BACH(5.63/UNIT)	272	2600	48	48	143	72	31	15	73	255	48	160	55	145	96	48	63	107	14	2	18	143	23	21	25	35	14	61	36	44	39	155	68	86	161	1	82	25	21	24	21	251	56	47	2888
864 @ 43.3%	ONE(6.36/UNIT)	687	4810	114	97	311	132	72	44	140	520	133	281	119	224	113	92	110	193	32	5	14	253	76	50	77	141	20	122	75	137	32	270	88	205	421	1	216	31	42	23	44	325	46	47	5498
563 @28.2%	TWO(10.6/UNIT)	1005	4510	87	96	234	140	100	101	92	347	146	210	140	145	197	73	82	150	50	10	24	170	110	73	107	299	75	08	94	87	47	293	59	268	532	10	328	73	131	83	22	186	53	37	5930
51 @ 2.6%	THREE(12.1/UNIT)	163	456	6	6	10	15	8	4	8	52	24	24	14	12	10	11	5	15	2	4	0	15	14	21	7	37	11	12	9	8	0	23	5	26	89	2	47	9	22	9	0	0	6	1	619
4 @ .2%	FOUR(23.3/UNIT)	15	78	1	1	1	0	1	1	2	0	2	1	7	0	4	0	4	1	1	1	0	1	4	5	2	3	2	0	1	1	0	3	9	6	10	0	7	0	5	0	0	5	0	1	93
1994 @ 100%	TOTAL(7.3/UNIT)	2142	12470	256	248	707	359	212	165	315	****353	676	335	526	428	224	264	474	107	22	58	599	227	170	212	502	120	273	210	270	117	741	227	579	****	14	662	137	216	138	85	744	161	129	14412

TABLE III

DUNN AVE

SUTTER ST.

OAK ST.

LAWRENCE

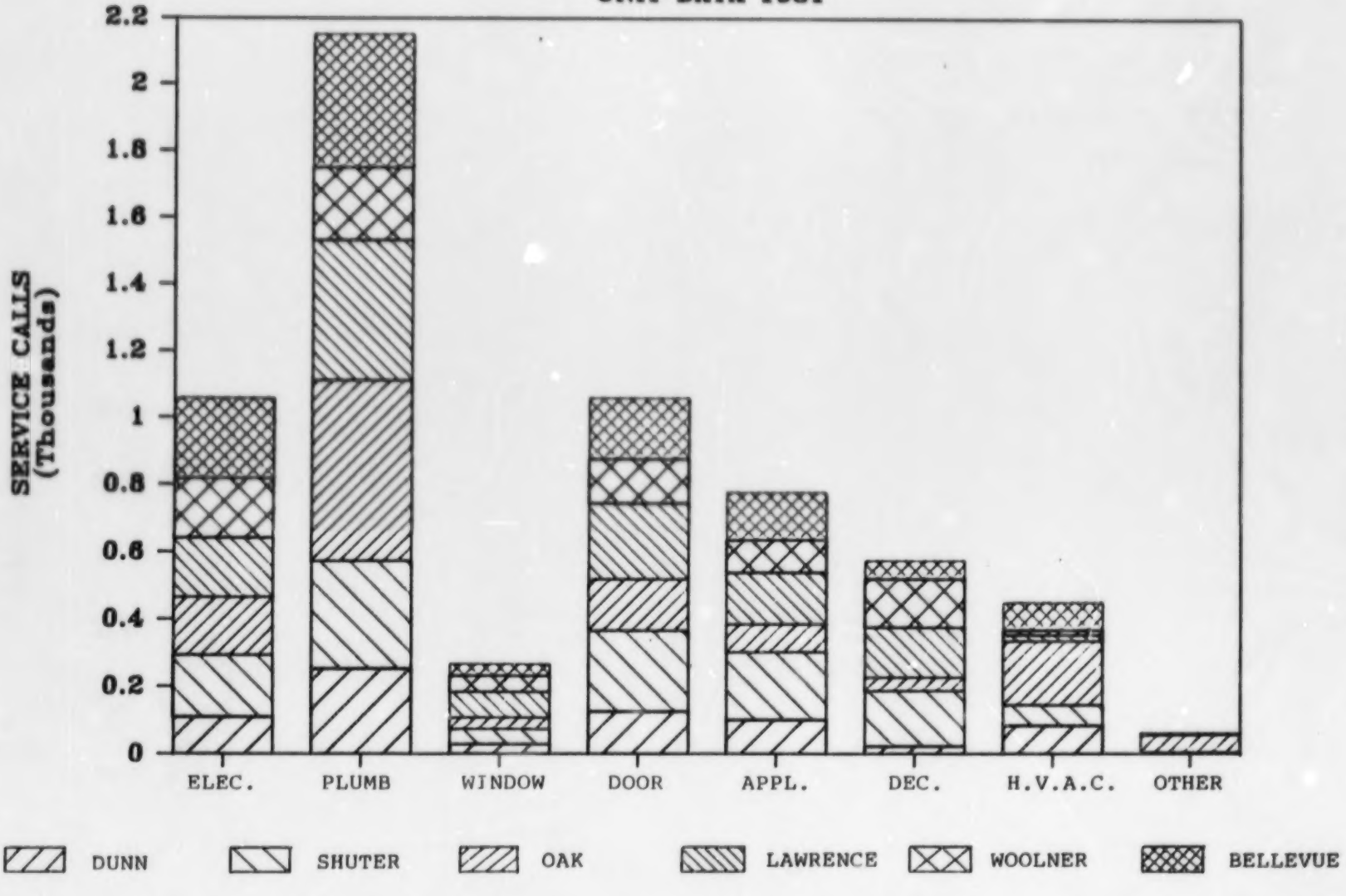
DOOLAGE

BELLEVUE

TOTAL

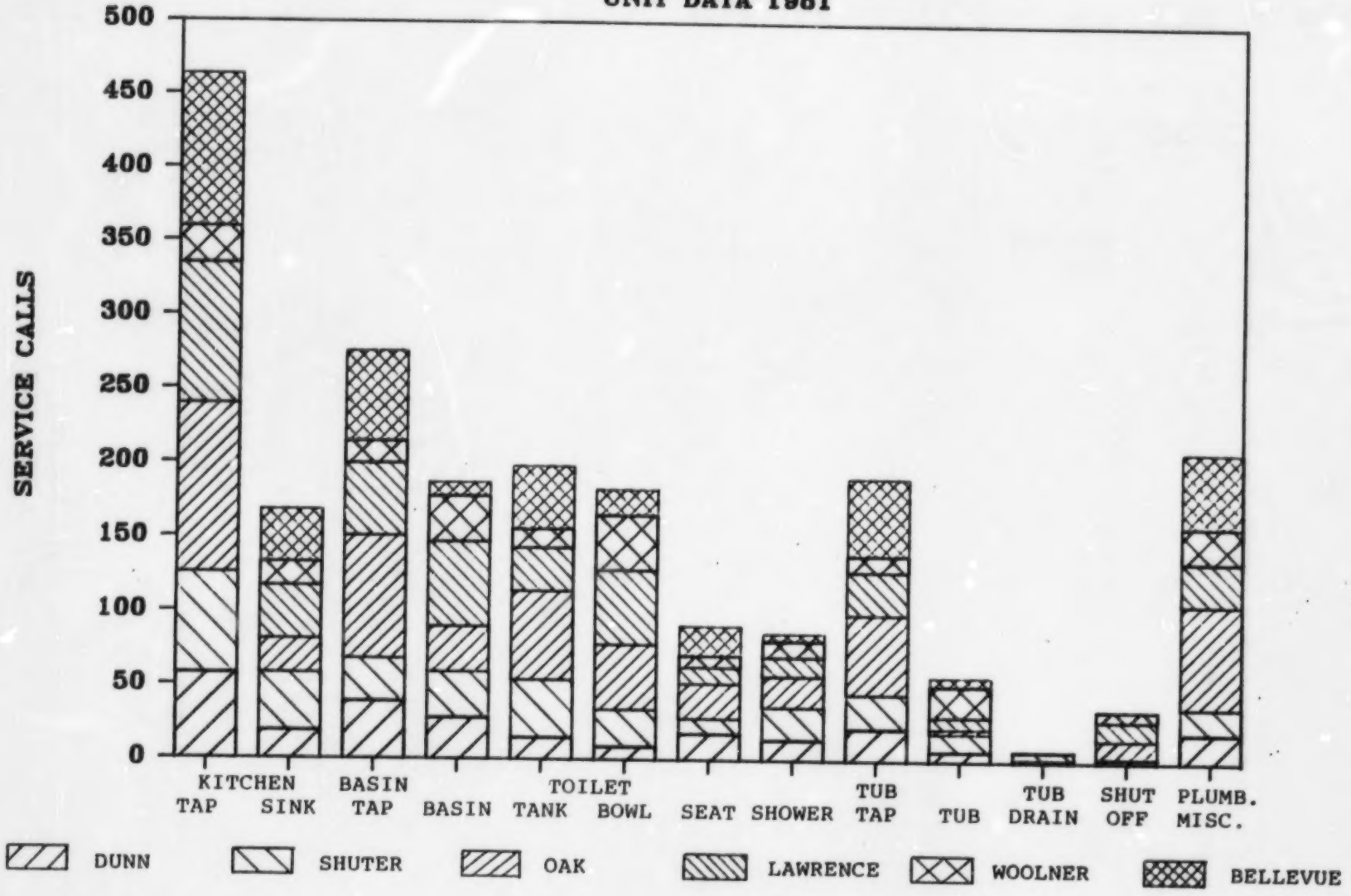
GROUP TOTALS

UNIT DATA 1981



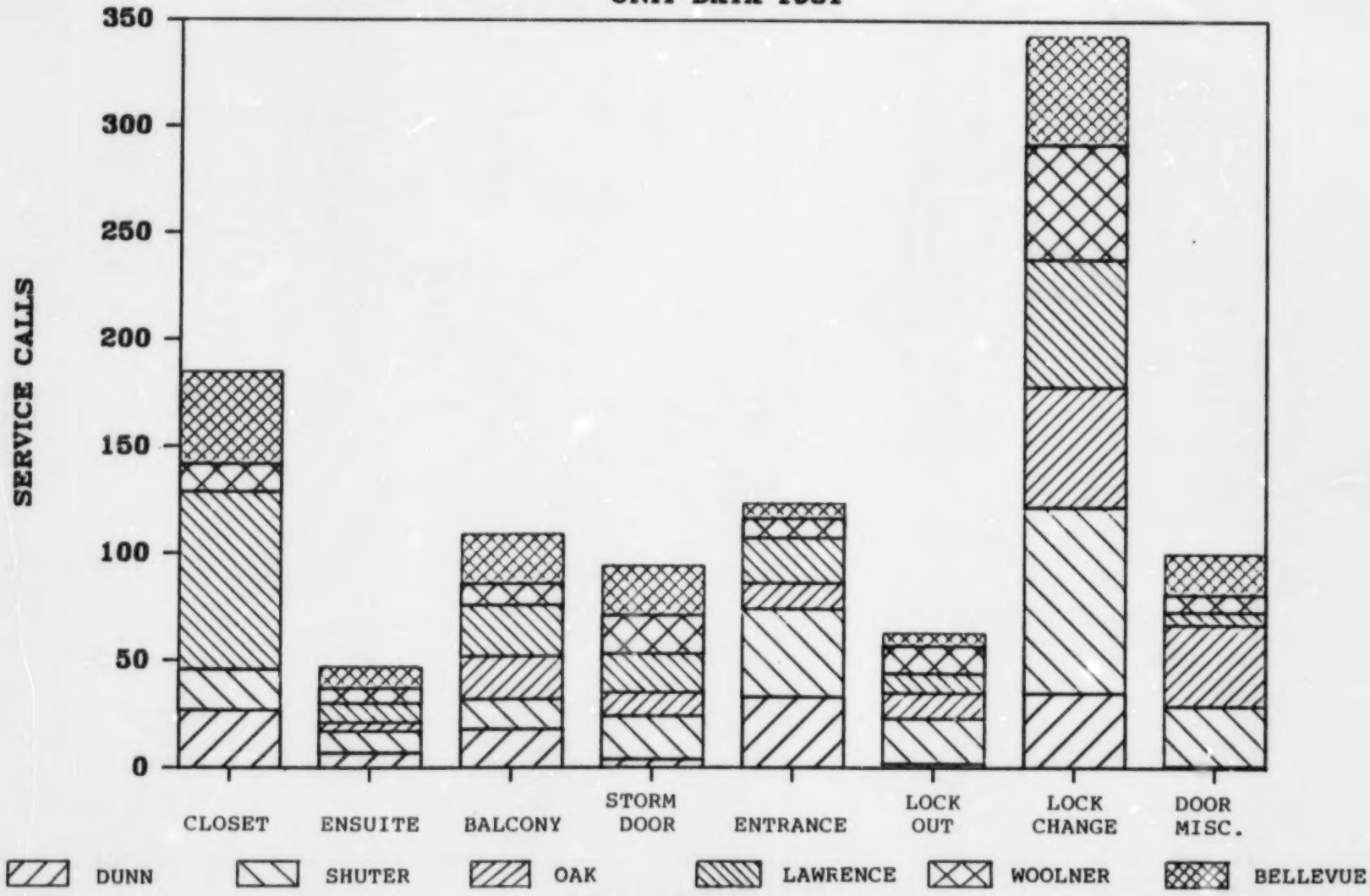
PLUMBING TOTAL

UNIT DATA 1981



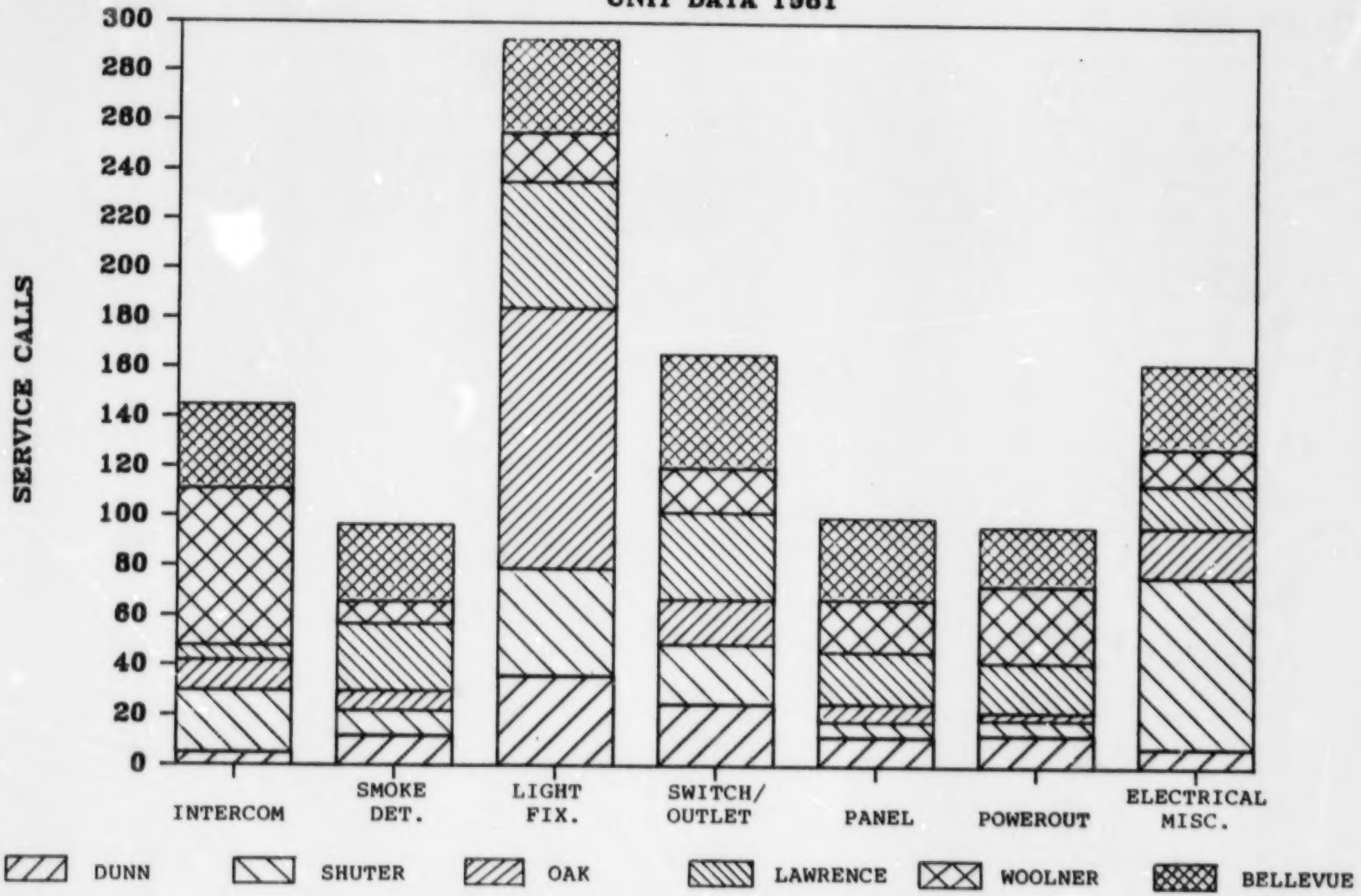
DOOR TOTAL

UNIT DATA 1981



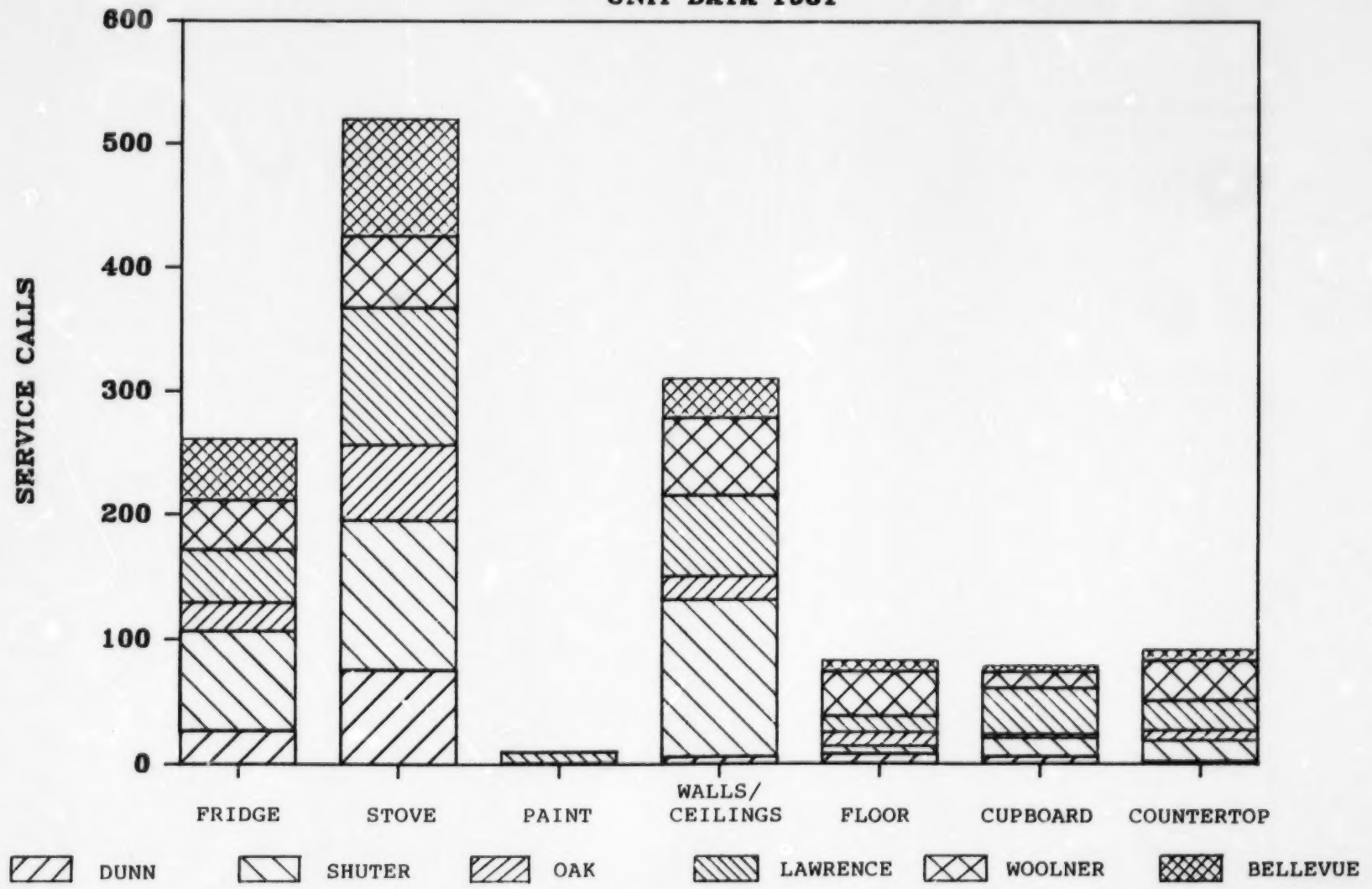
ELECTRIC TOTAL

UNIT DATA 1981

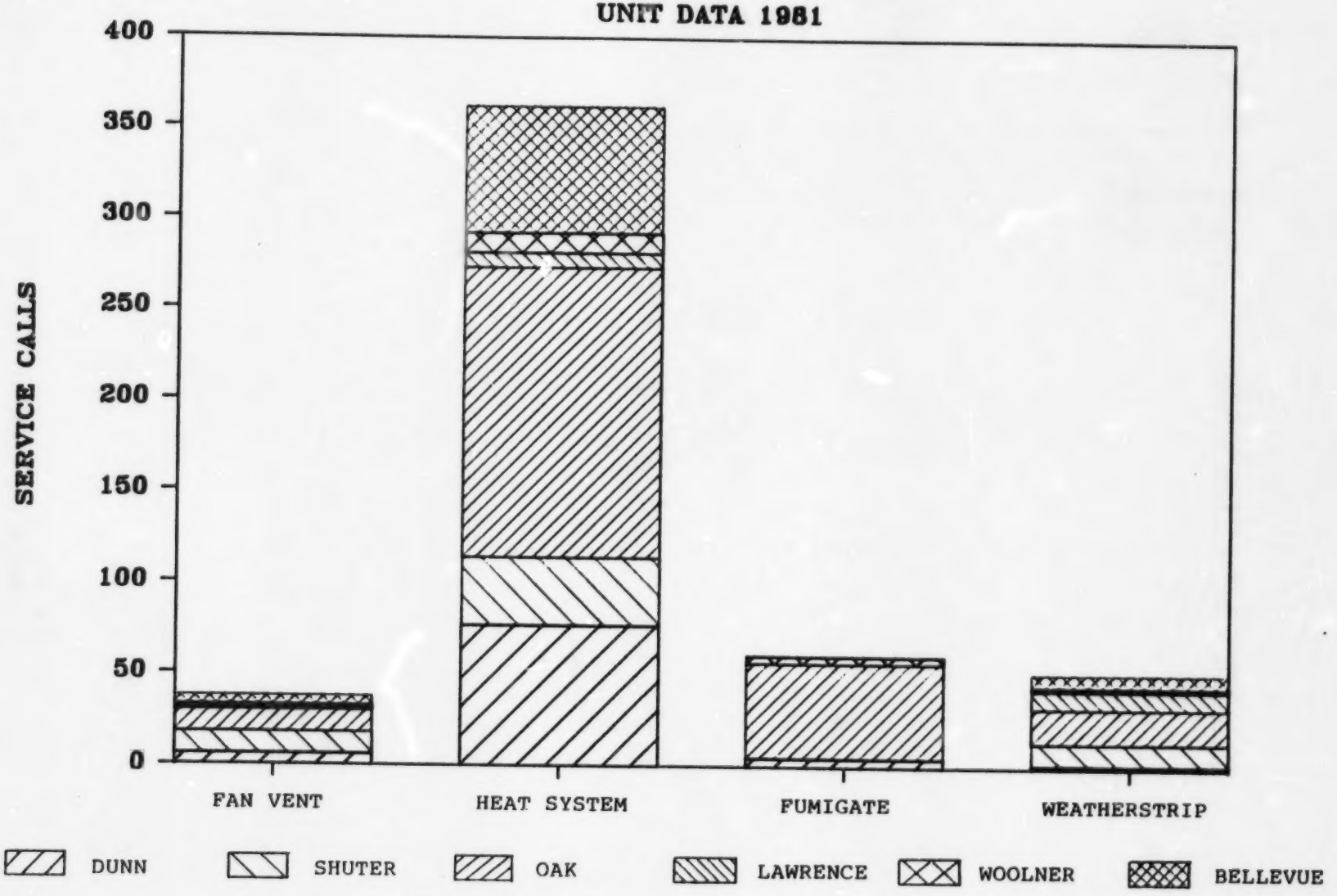


APPLIANCES AND DECORATING

UNIT DATA 1981

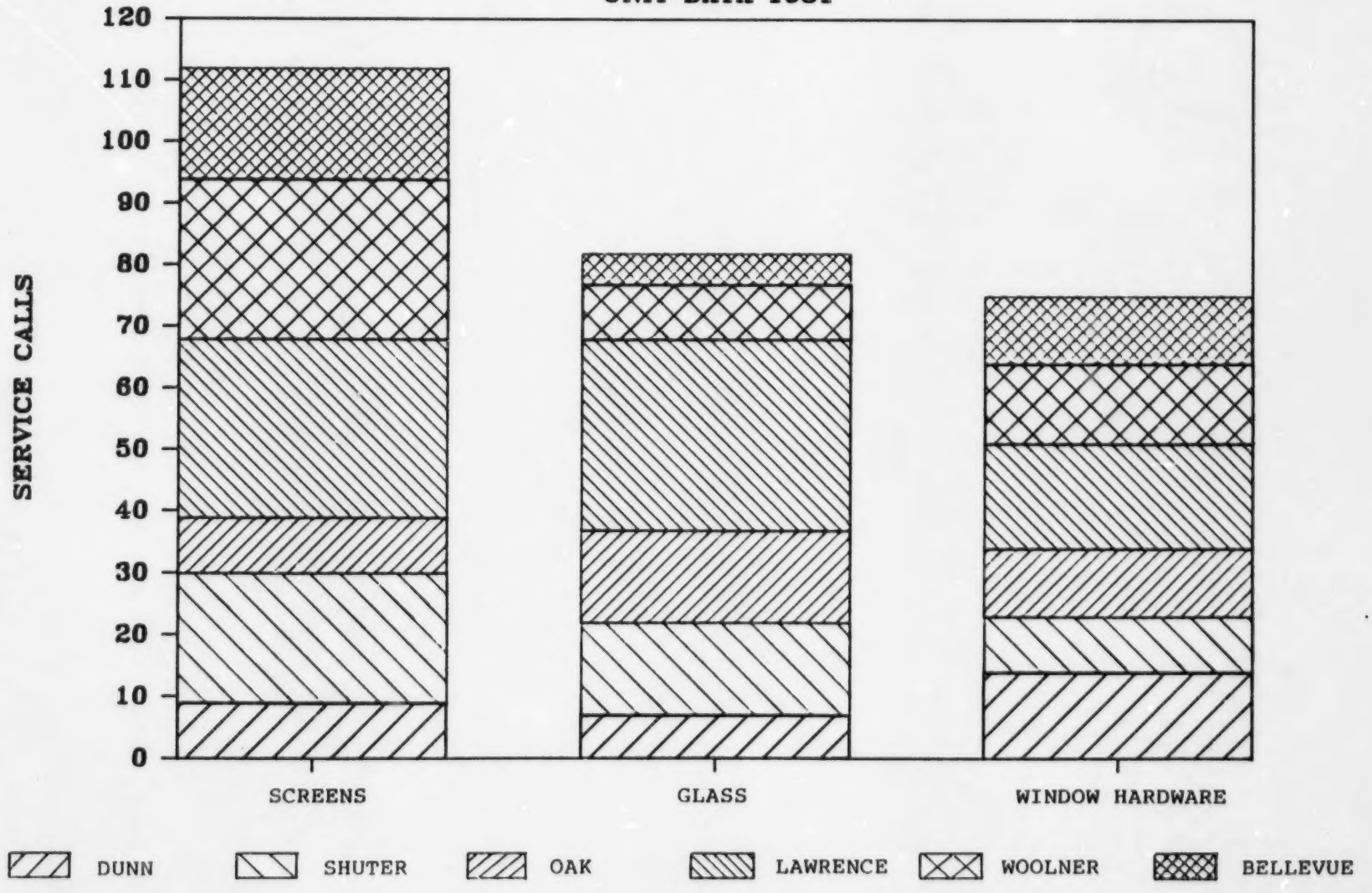


H.V.A.C. AND OTHER



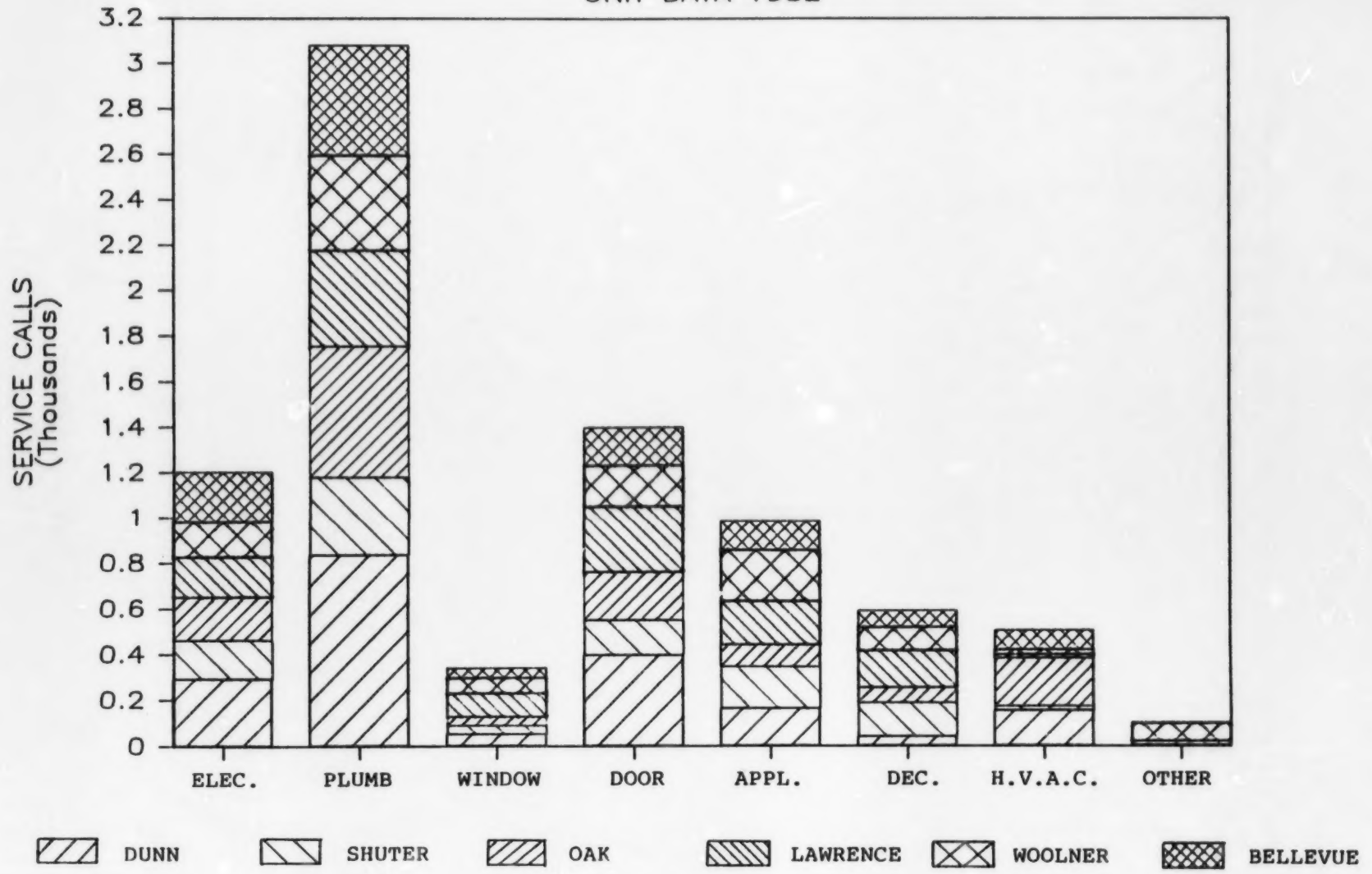
WINDOW TOTAL

UNIT DATA 1981



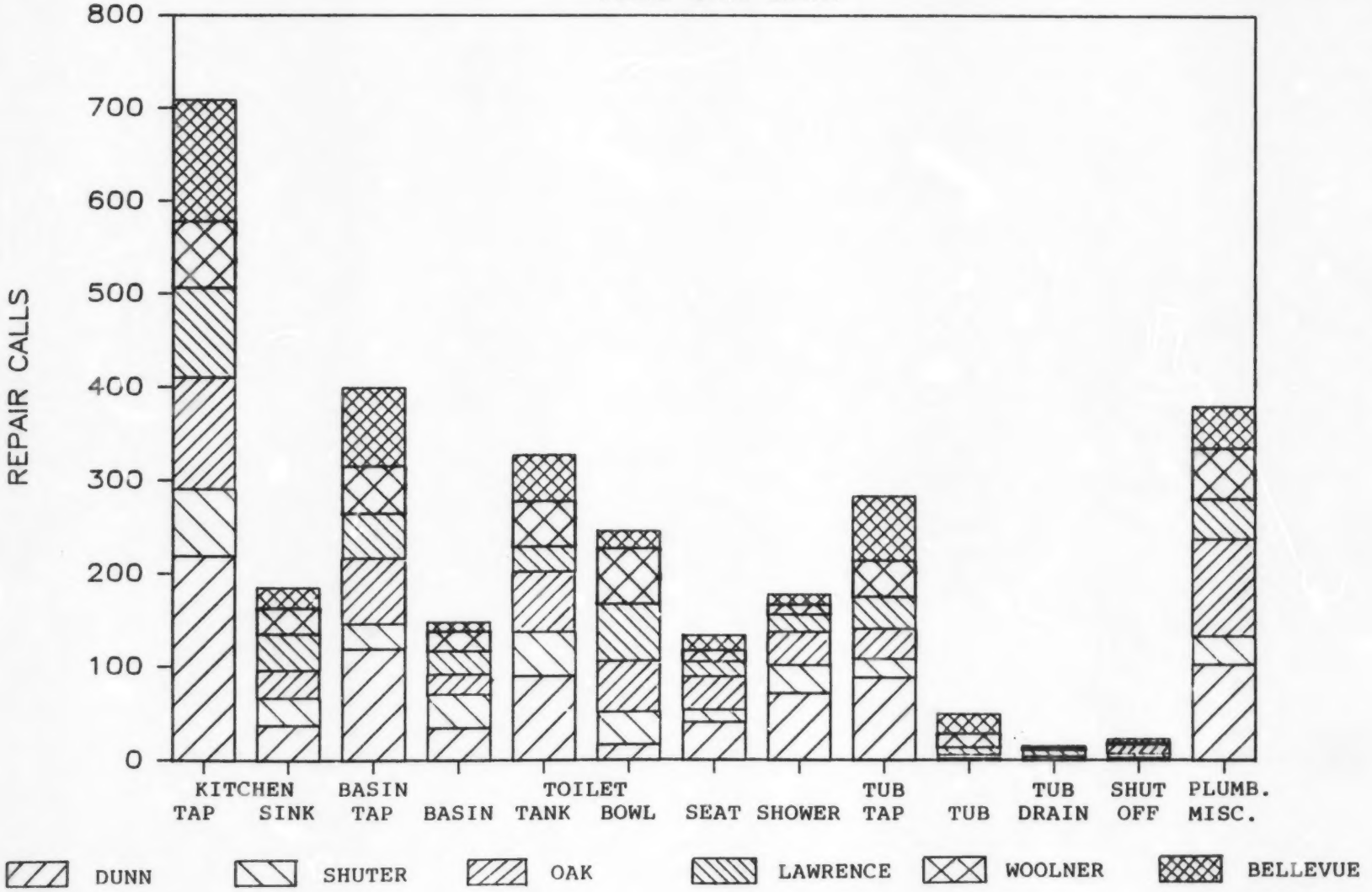
GROUP TOTALS

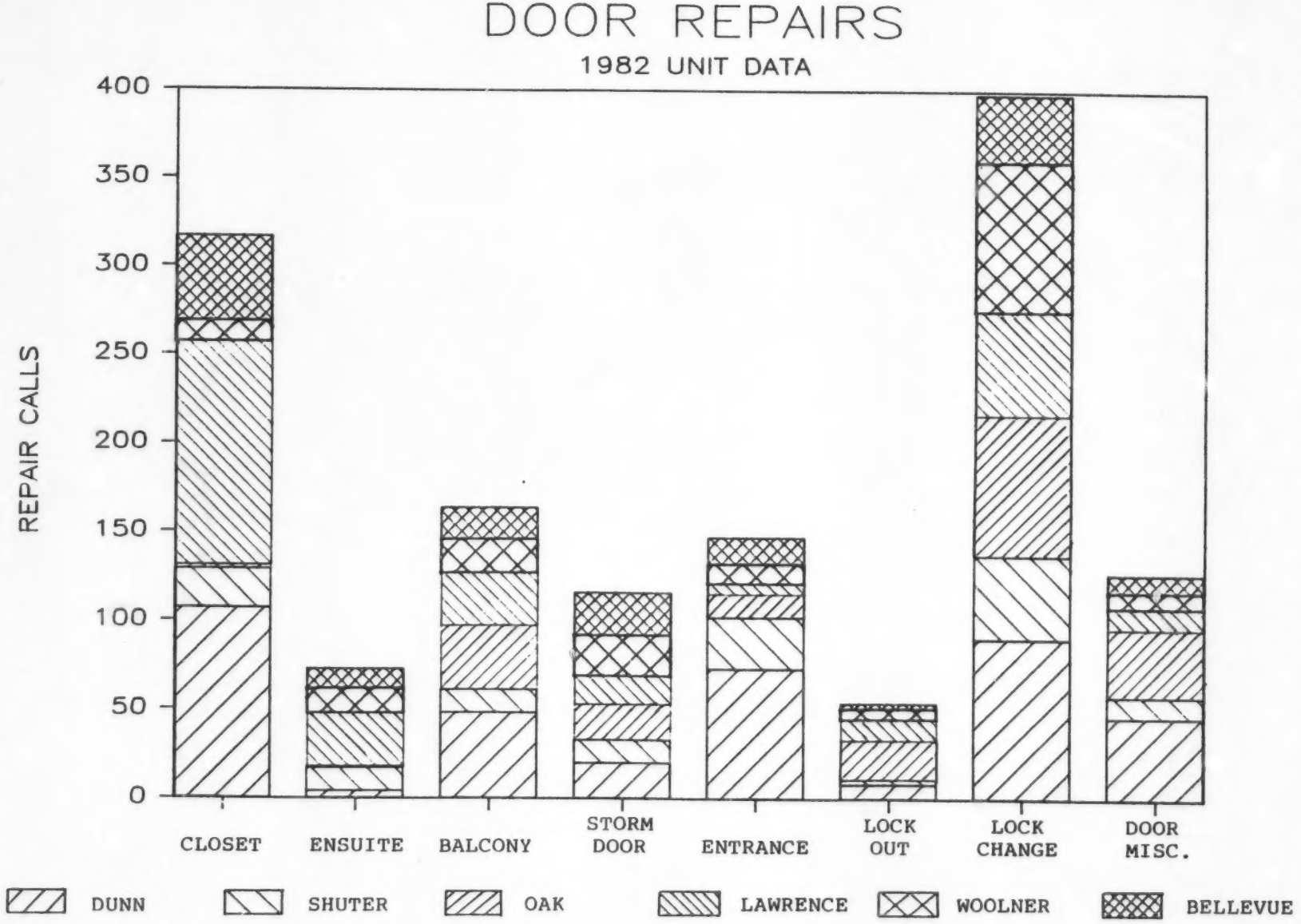
UNIT DATA 1982



PLUMBING REPAIRS

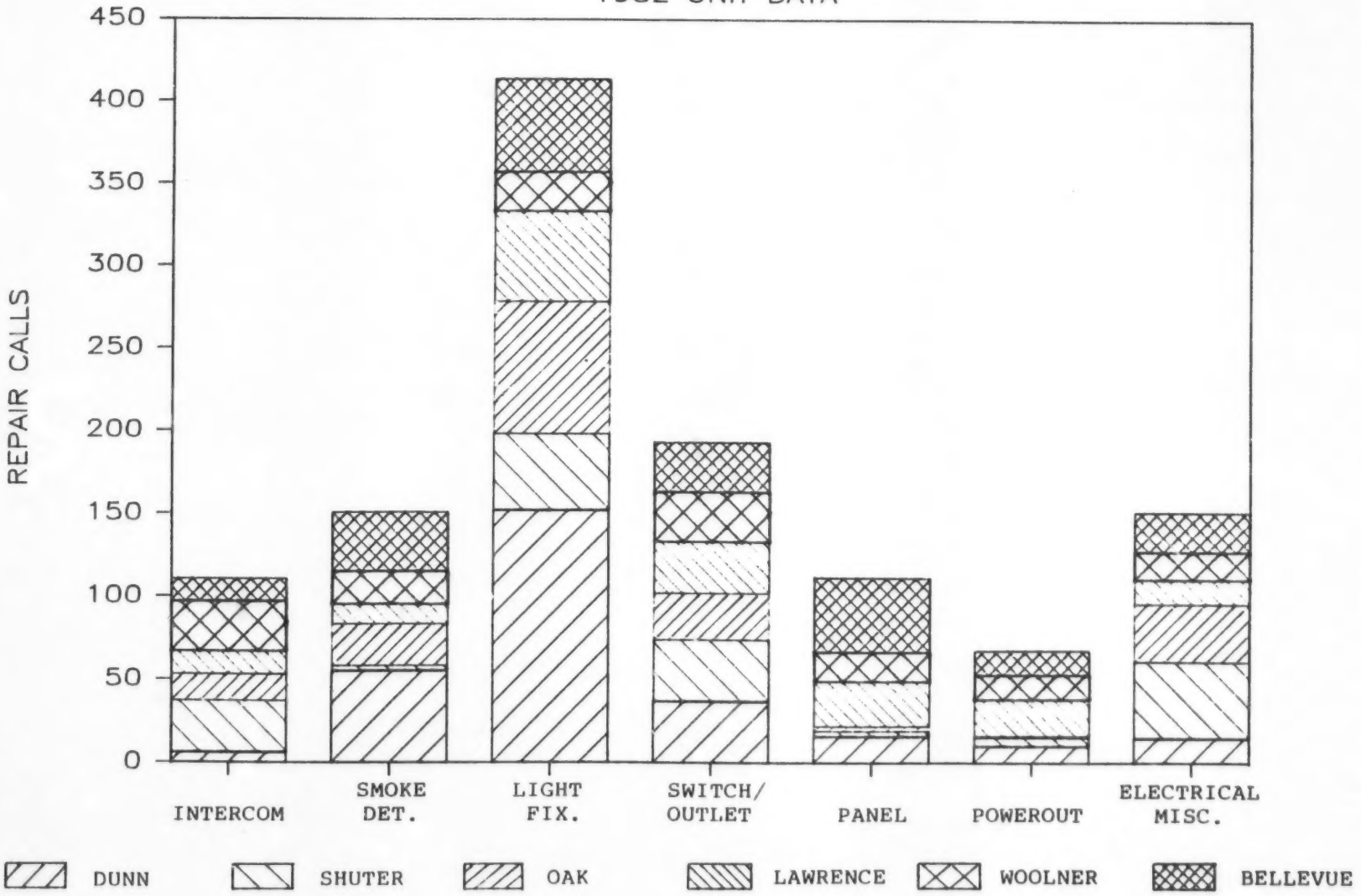
1982 UNIT DATA



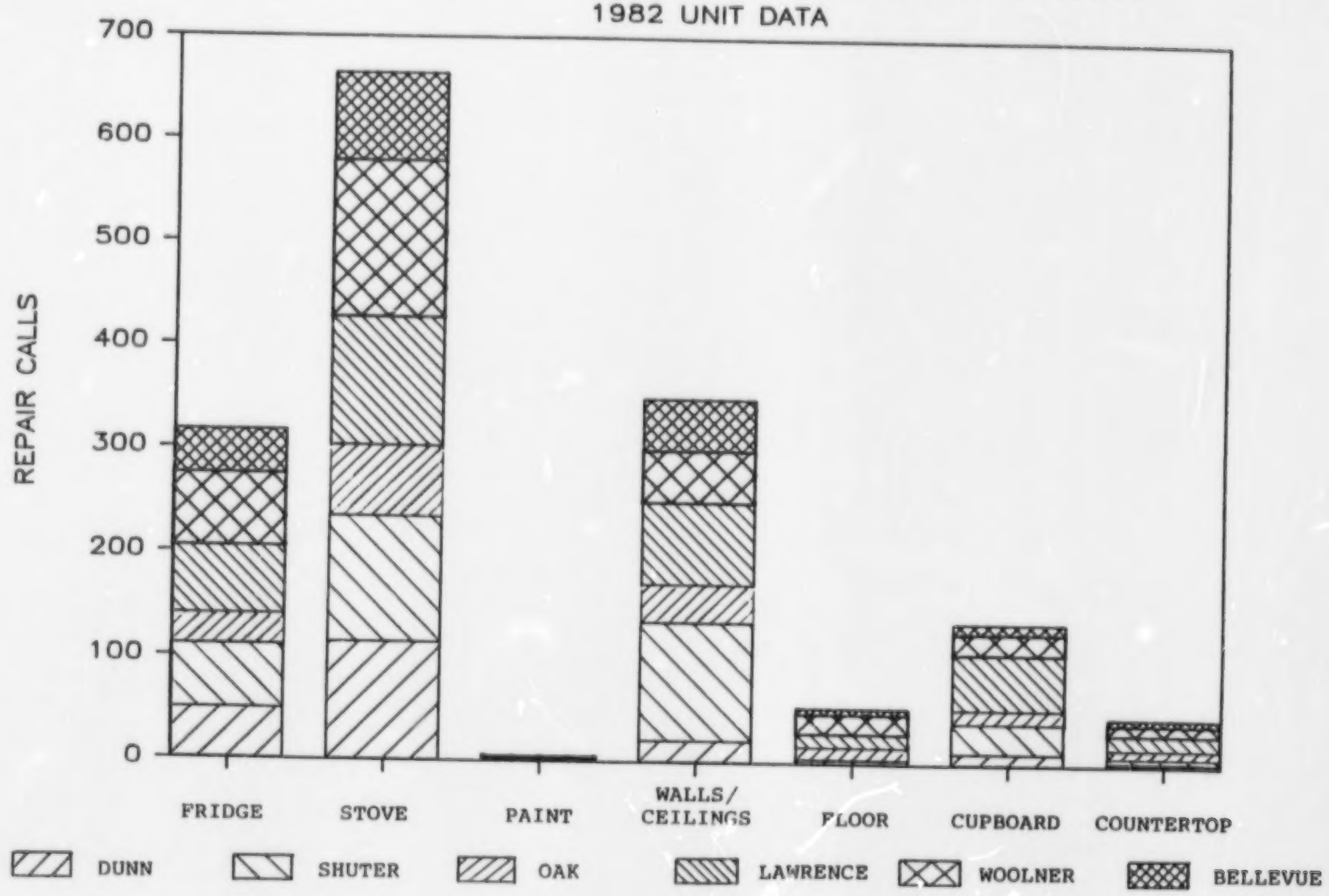

DOOR REPAIRS
1982 UNIT DATA
REPAIR CALLS
400
350
300
250
200
150
100
50
0
CLOSET
ENSUITE
BALCONY
STORM DOOR
ENTRANCE
LOCK OUT
LOCK CHANGE
DOOR MISC.
DUNN
SHUTER
OAK
LAWRENCE
WOOLNER
BELLEVUE

ELECTRICAL REPAIRS

1982 UNIT DATA

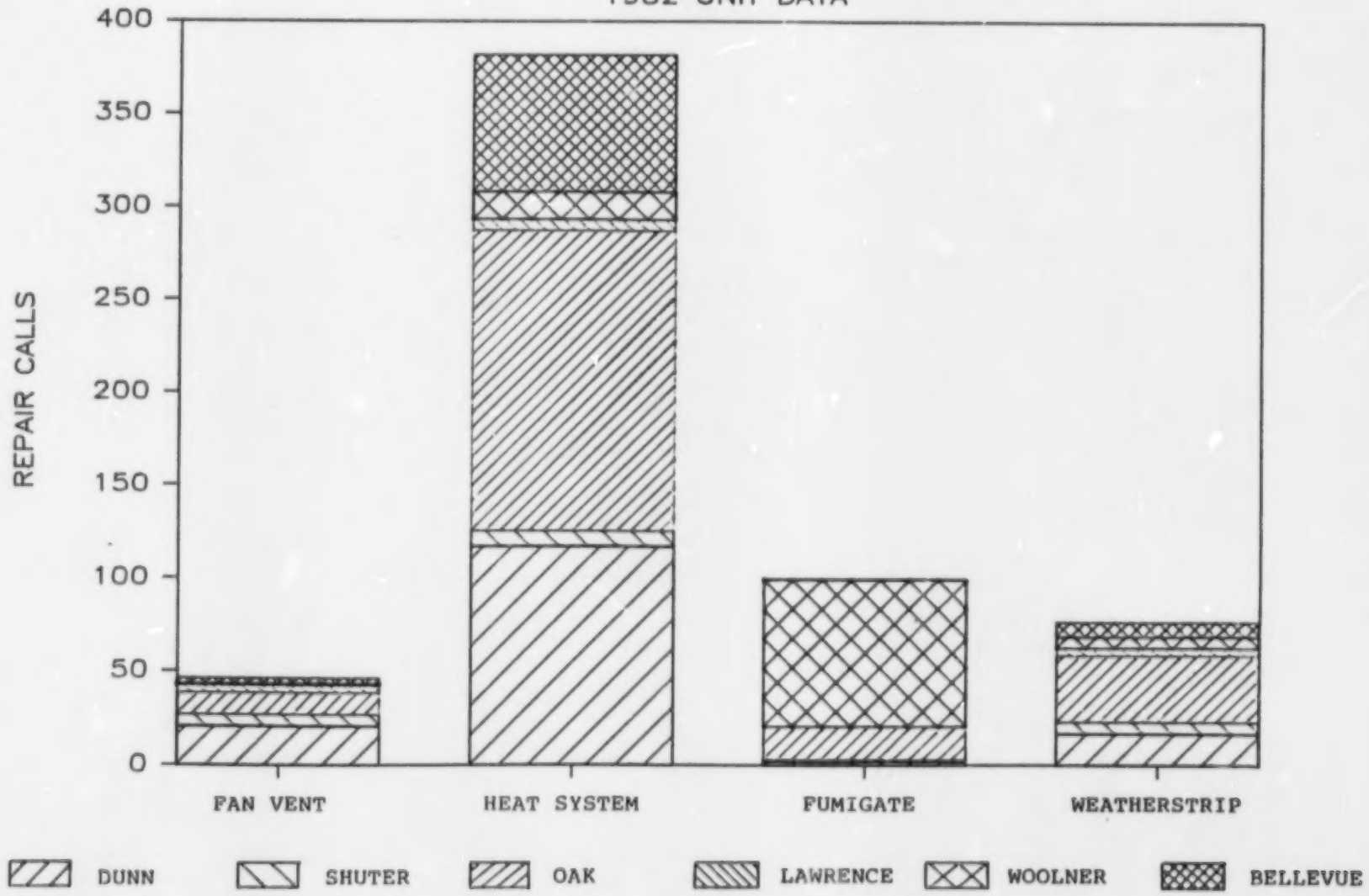


APPLIANCES AND DECORATING



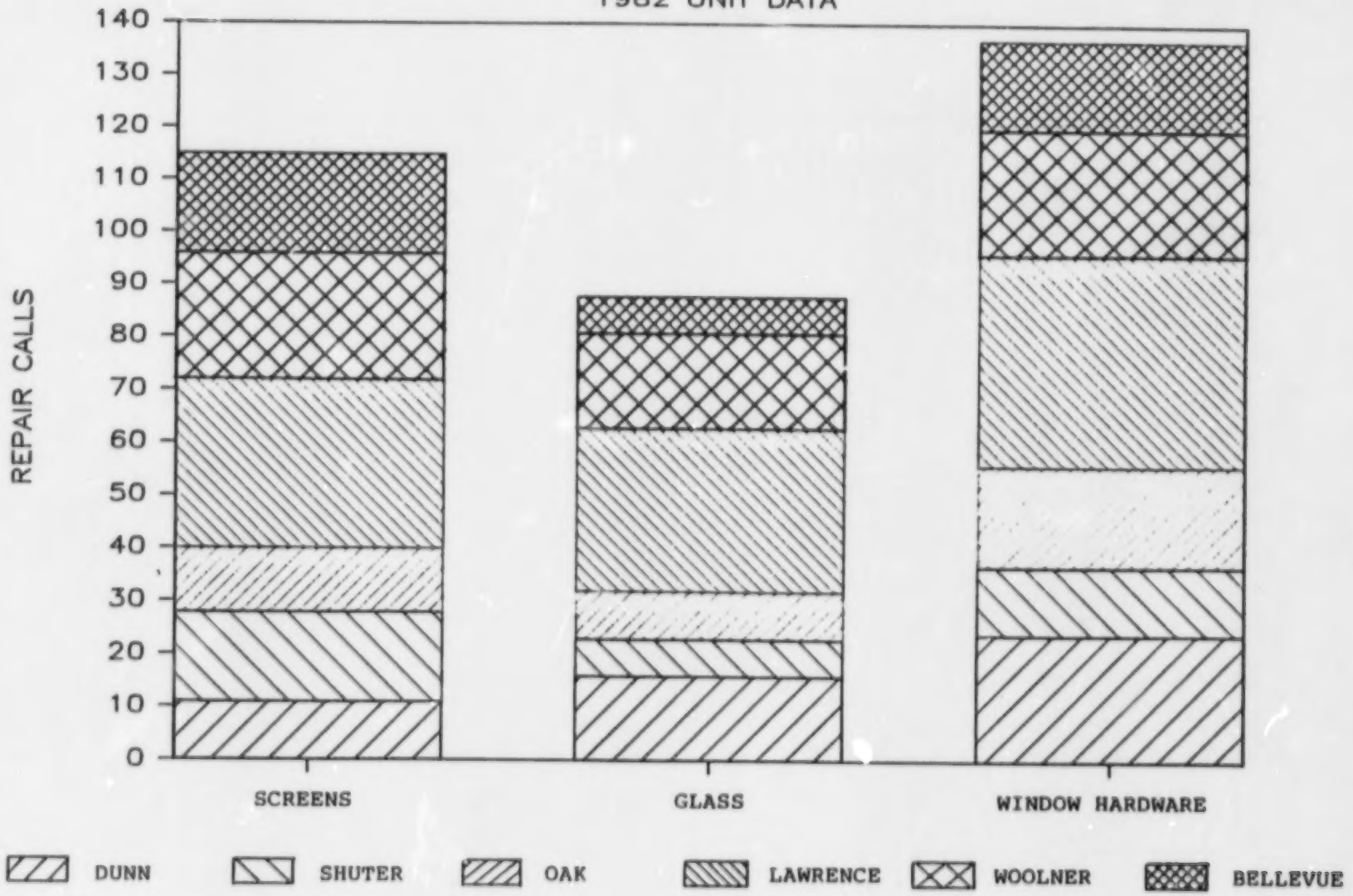
H.V.A.C.

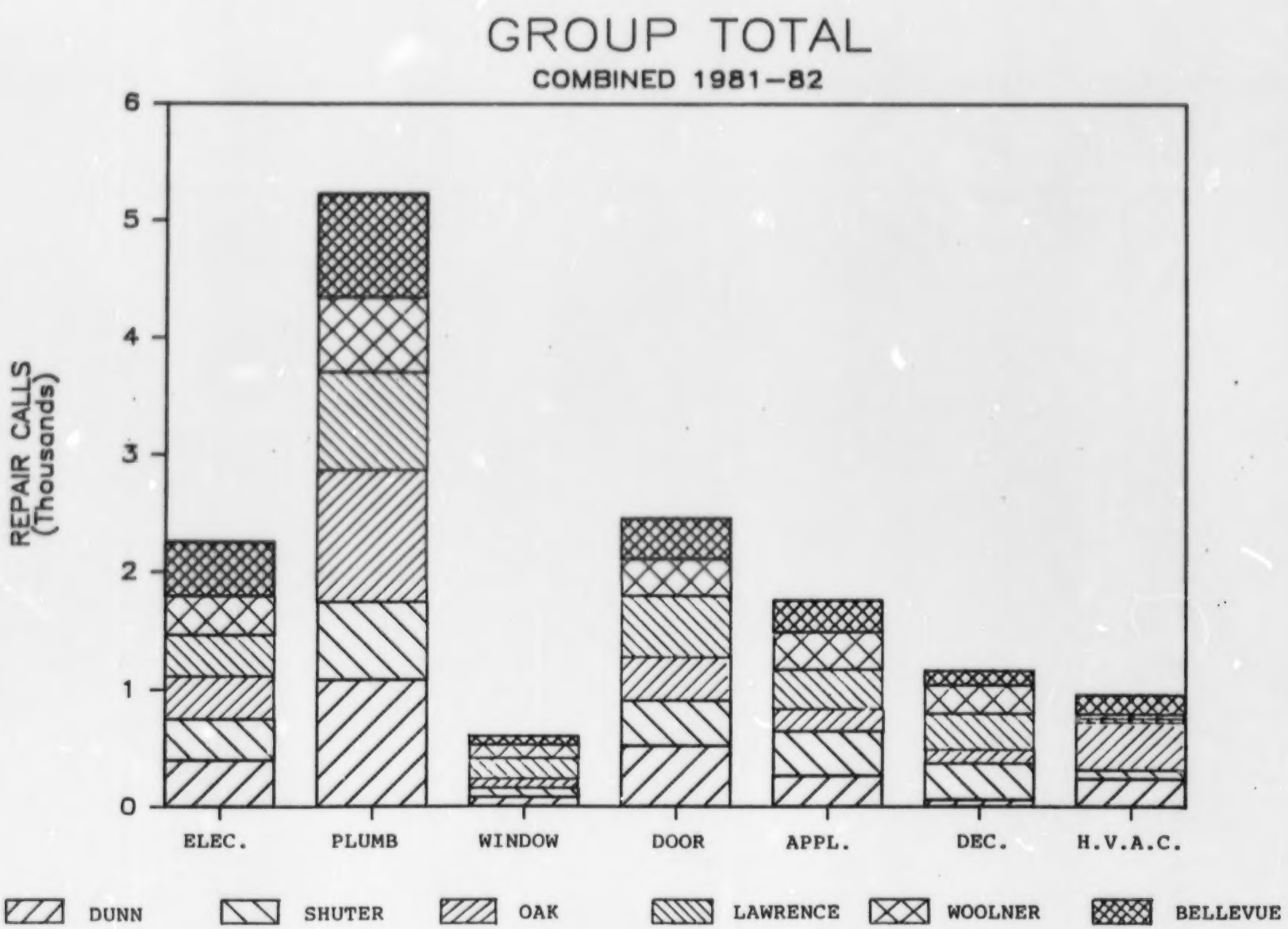
1982 UNIT DATA



WINDOW REPAIRS

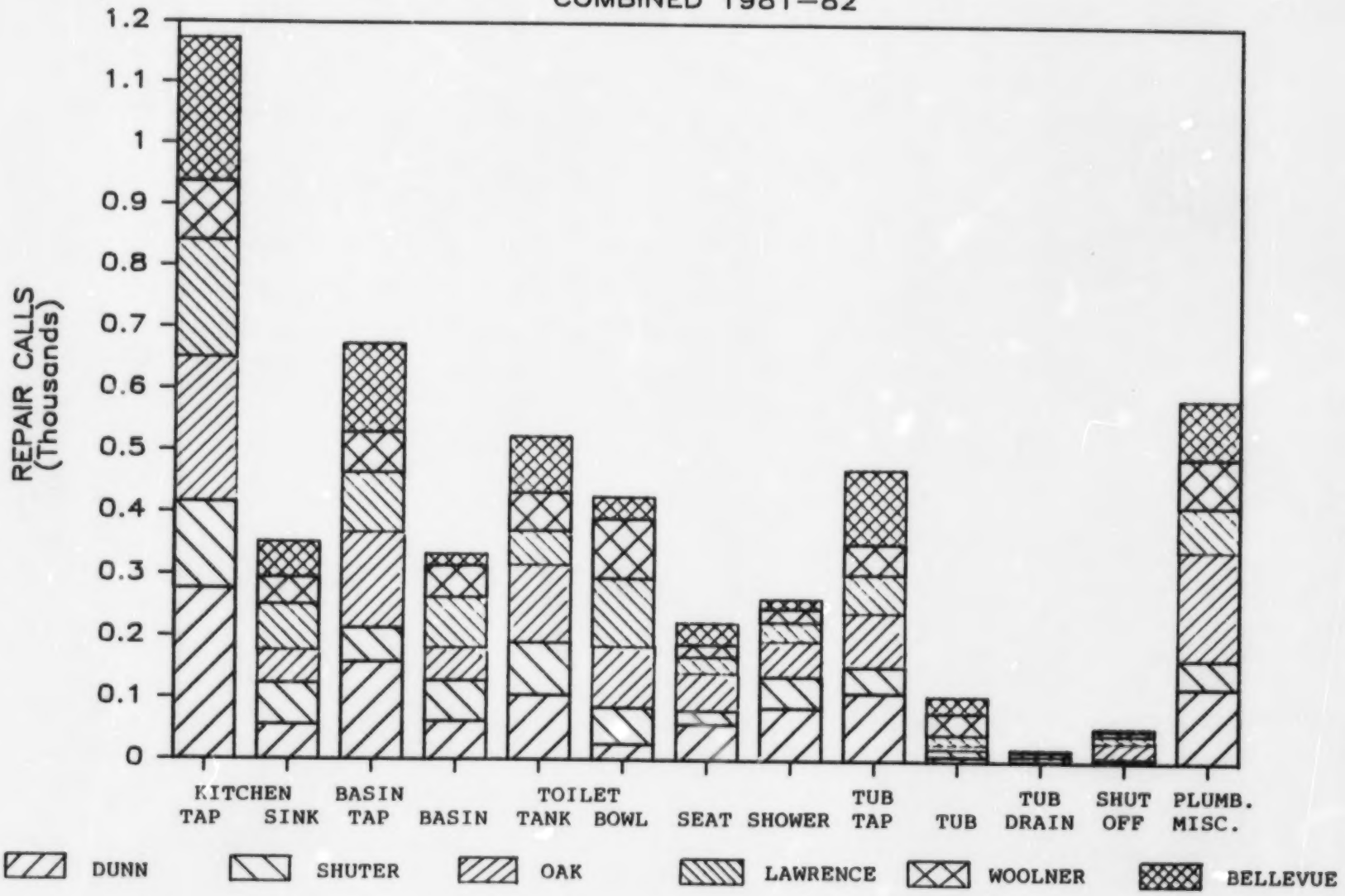
1982 UNIT DATA

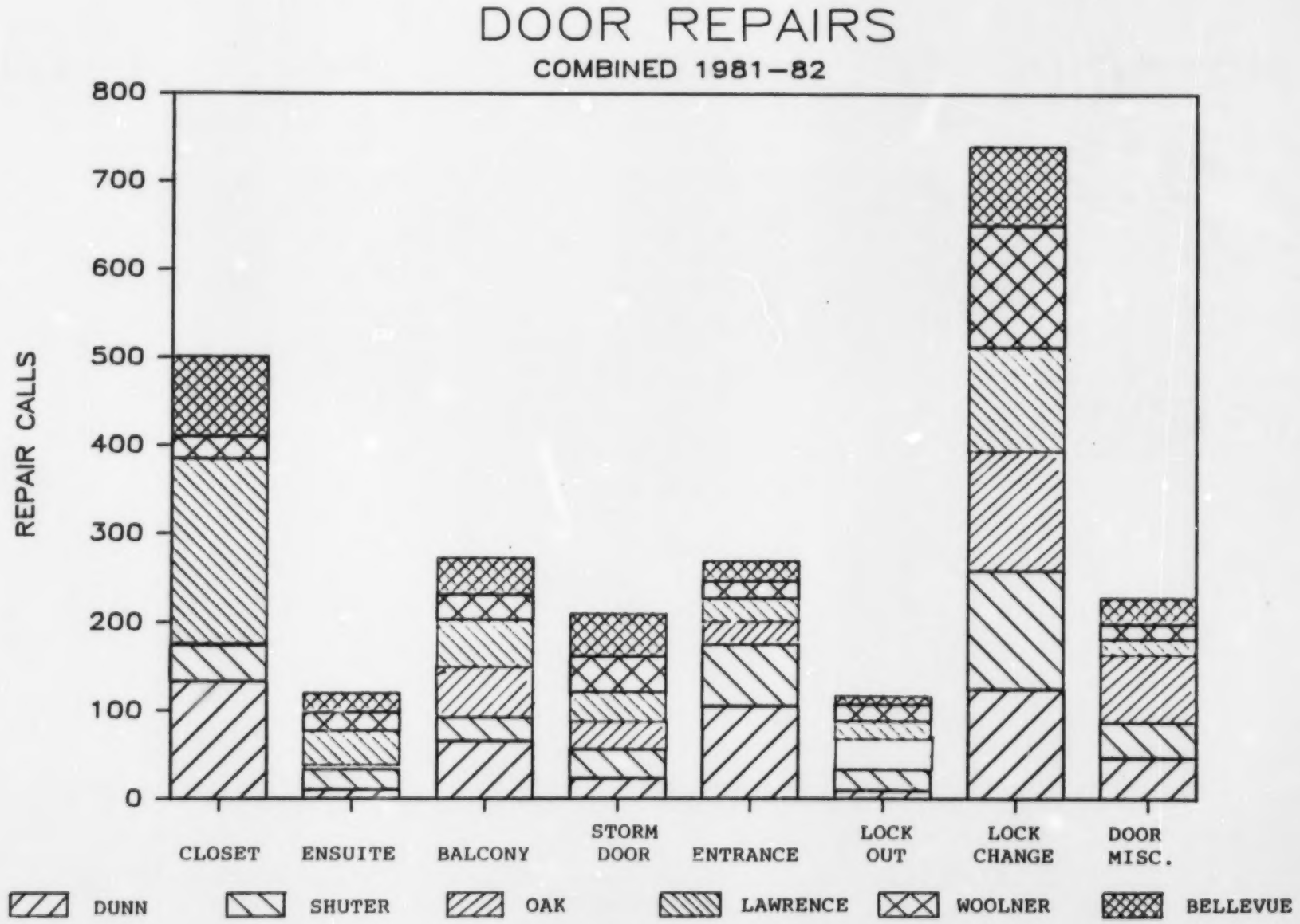



GROUP TOTAL
COMBINED 1981–82
REPAIR CALLS (Thousands)
6
5
4
3
2
1
0
ELEC.
PLUMB
WINDOW
DOOR
APPL.
DEC.
H.V.A.C.
DUNN
SHUTER
OAK
LAWRENCE
WOOLNER
BELLEVUE

UNIT PLUMBING

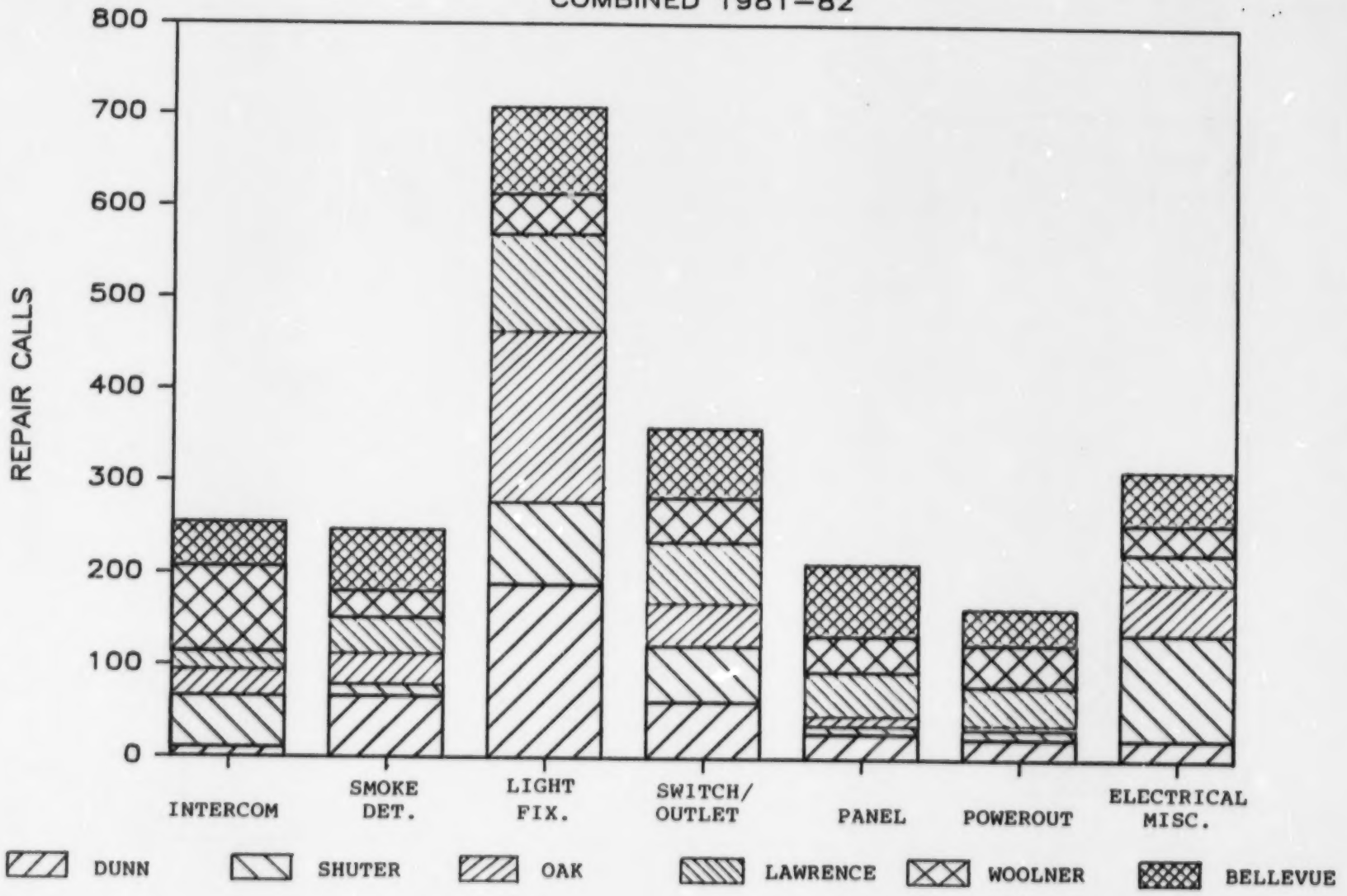
COMBINED 1981–82




DOOR REPAIRS
COMBINED 1981–82
REPAIR CALLS
800
700
600
500
400
300
200
100
0
CLOSET
ENSUITE
BALCONY
STORM DOOR
ENTRANCE
LOCK OUT
LOCK CHANGE
DOOR MISC.
DUNN
SHUTER
OAK
LAWRENCE
WOOLNER
BELLEVUE

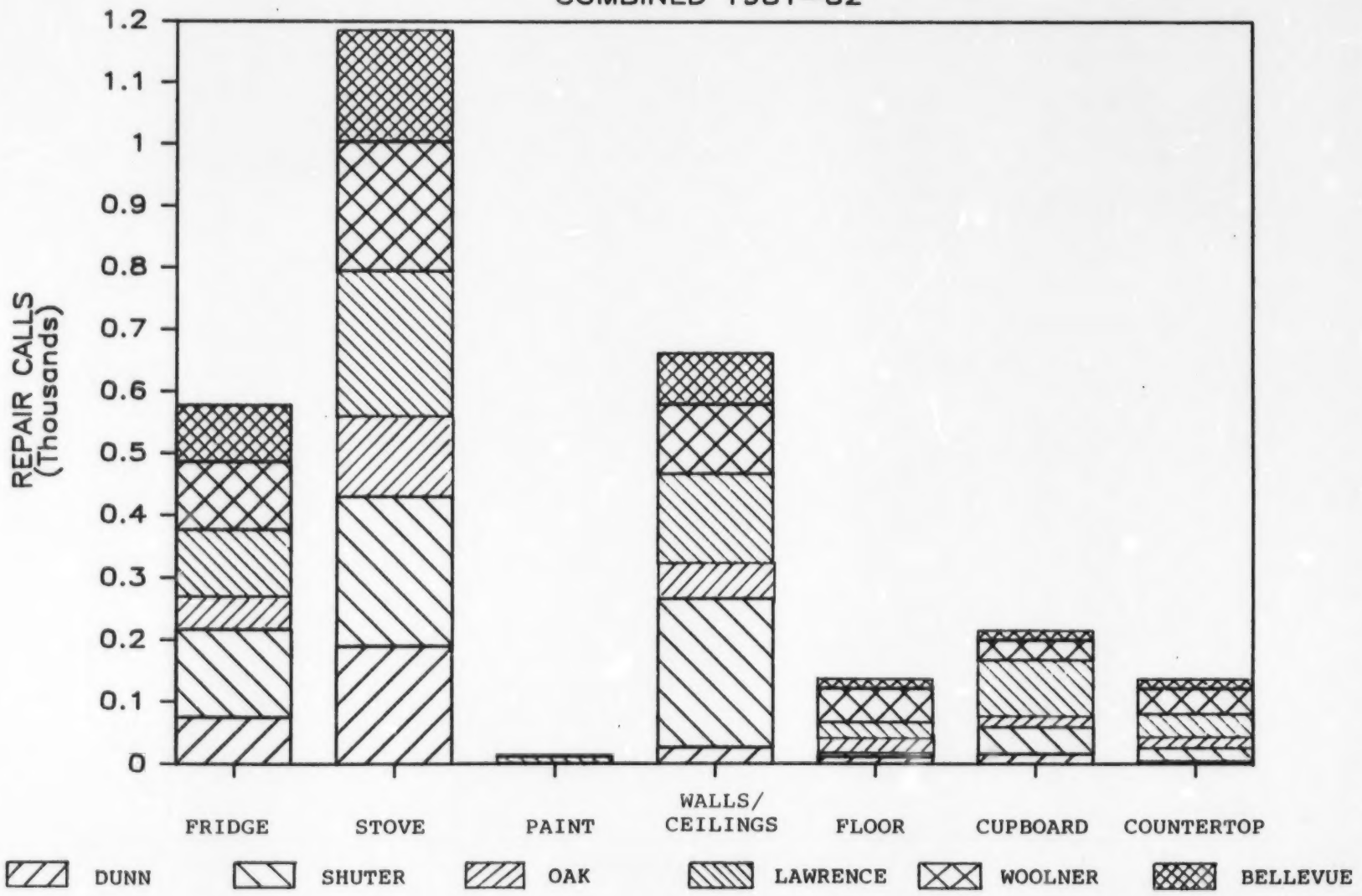
UNIT ELECTRICAL

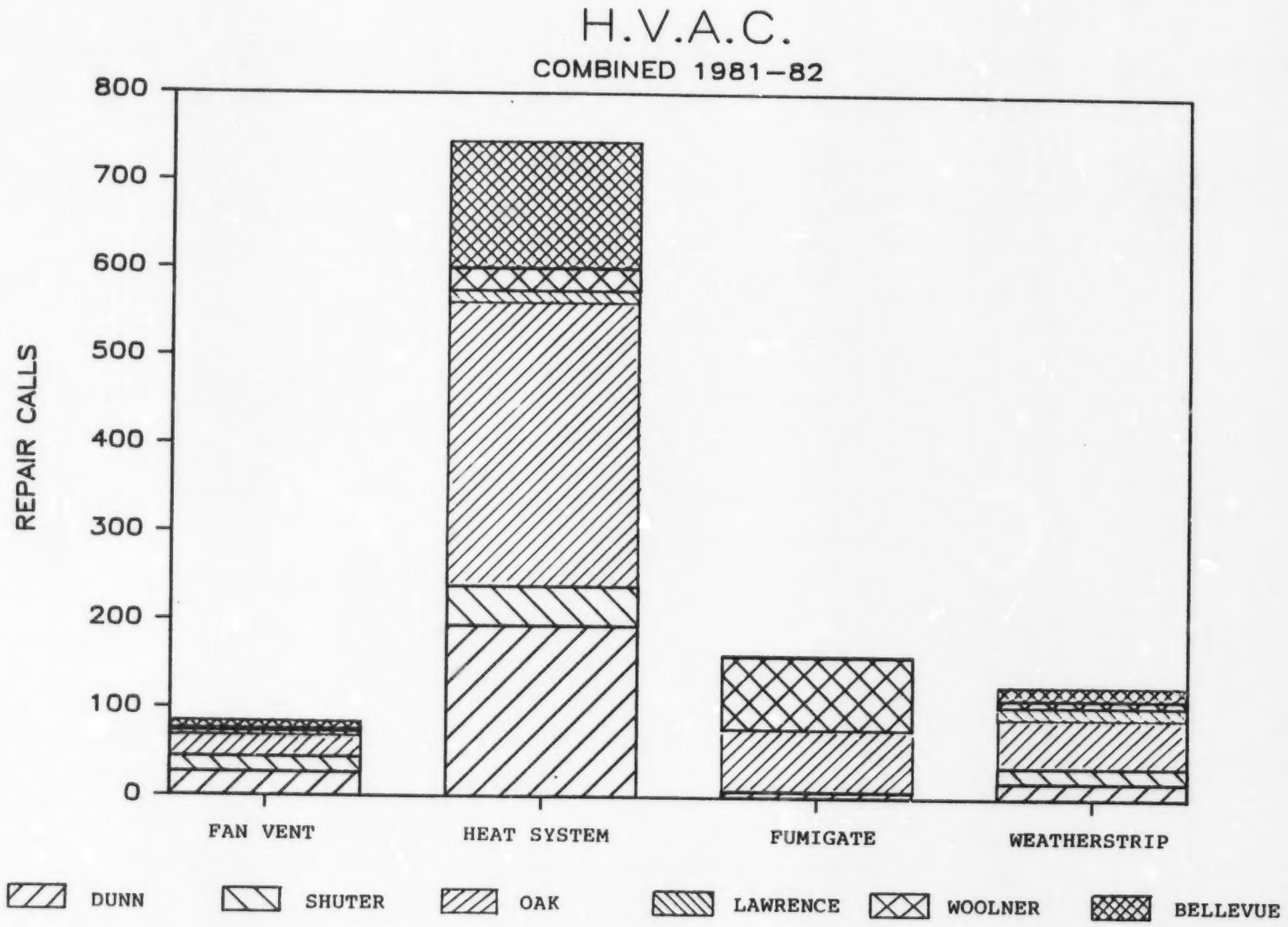
COMBINED 1981–82



APPLIANCE AND DECORATING REPAIRS

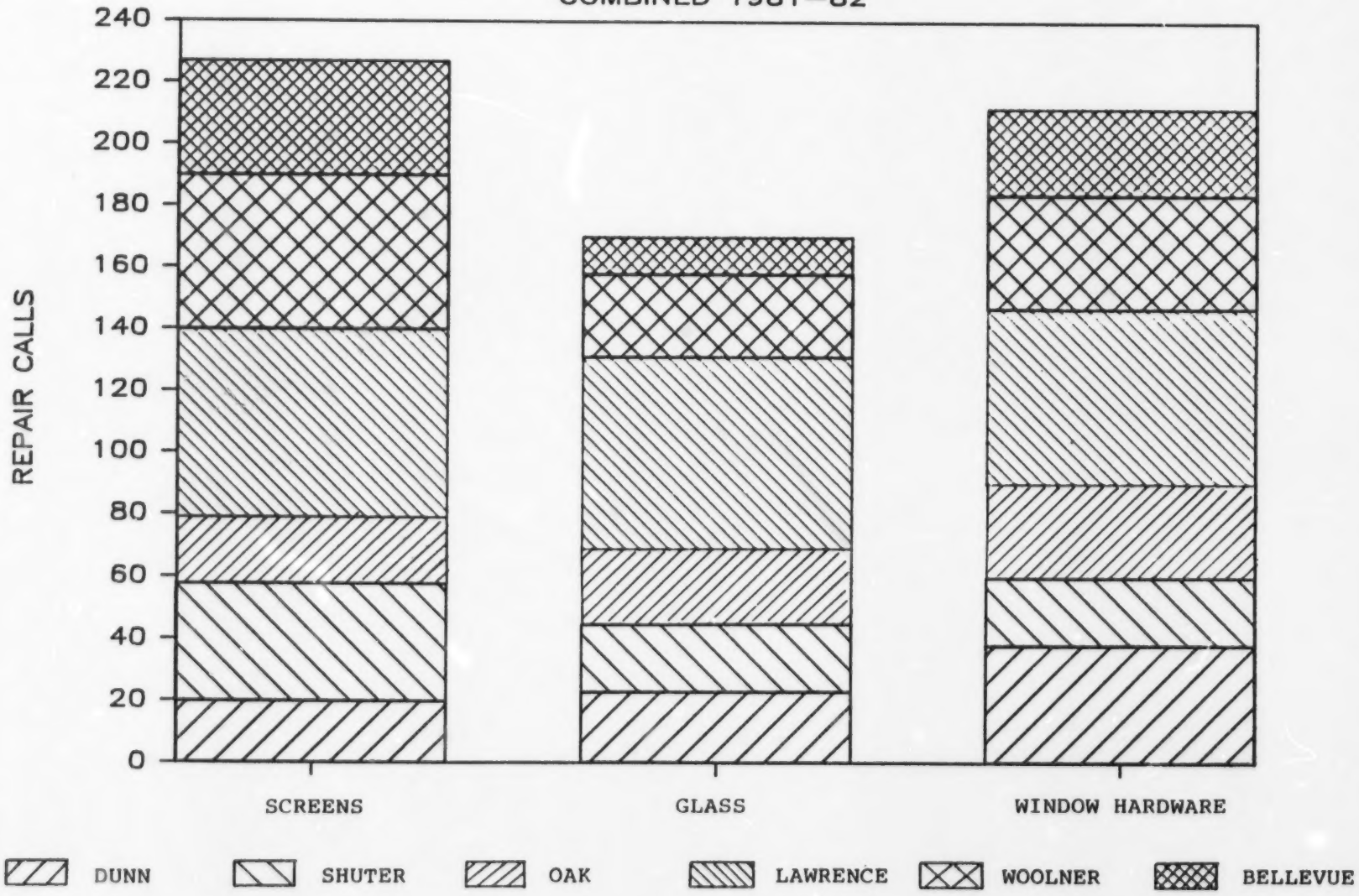
COMBINED 1981–82




H.V.A.C.
COMBINED 1981–82
REPAIR CALLS
800
700
600
500
400
300
200
100
0
FAN VENT
HEAT SYSTEM
FUMIGATE
WEATHERSTRIP
DUNN
SHUTER
OAK
LAWRENCE
WOOLNER
BELLEVUE

WINDOW REPAIRS

COMBINED 1981–82



POOR

QUALITY

ORIGINAL